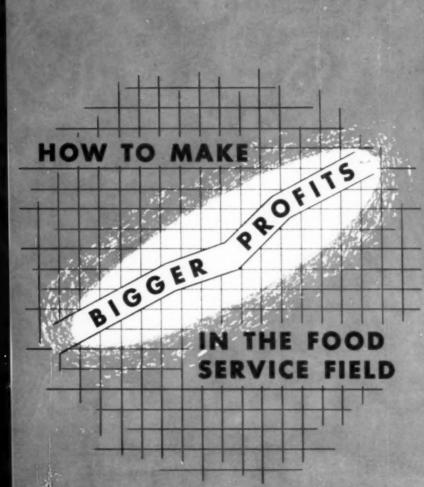
COMMERCIAL REFRIGERATION & AIR CONDITIONING



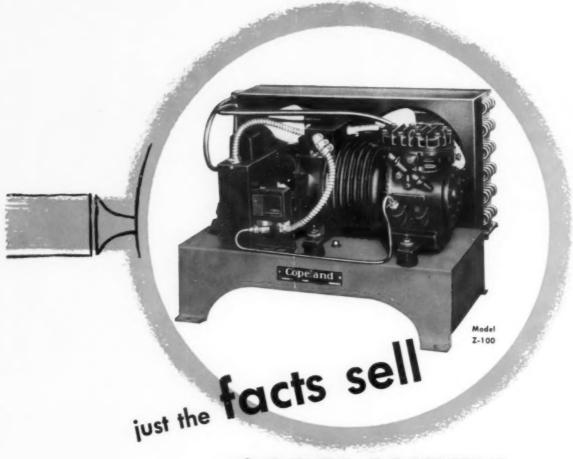








MERCHANDISING, SELLING, INSTALLATION AND MAINTENANCE OF AIR CONDITIONING AND COMMERCIAL REFRIGERATION EQUIPMENT



COPELAMETIC

THE ACCESSIBLE HERMETIC

Take a fact like direct drive, hermetically sealed. Your customer will know this Copelametic feature eliminates breakdowns from frayed belts and leaky seals. No manual oiling to worry about, either.

But your prime sales maker is Copelandengineered "accessibility." The rare servicing needed by Copelametic is taken care of on the spot by your own mechanics . . . no lost time for factory repairs.

Quiet-running, efficient Copelametic units are available for all applications, remote or self-contained. Air-cooled models from 1/6 H.P. through 3 H.P., water-cooled, ½ H.P. through 7½ H.P.





REFRICERATION UNITS (OPEN TYPE AND COPELAMETIC) WATER COOLERS

DEPENDABLE STATE REFRIGERATION



COPELAND REFRIGERATION CORPORATION . SIDNEY, OHIO

Circle No. 1 on Reader Service Card



this motor could have been saved with an ALCO SUCTION PRESSURE REGULATOR

TYPES 771-772

Regulators; Salemaid Valves; Float Valves;

Float Switches

ENGINEERED FOR SERVICE FOR LIFE

Any electric motor is safe from burnout caused by overloads . . . if you install an Alco 771 or 772 in the suction line.

They prevent a build-up of excessive pressure at the compressor—add years to motor life-on any system that may be affected by:

- high starting loads
- surges in suction pressure due to load changes
- high suction pressure from hot gas defrost
- prolonged operation at excessive suction pressure
- low voltage and high pressures

SEND FOR BULLETIN 186, WHICH GIVES COMPLETE INFORMATION.



SEE YOUR ALCO WHOLESALER

ALCO VALVE CO. Designers and Manufacturers of Thermostatic Expansion Valves; Evaporator Pressure

843 KINGSLAND AVE. . ST. LOUIS S. MO.

6318

Circle No. 3 on Reader Service Card

Controlled Comfort B.B.*

*BEFORE BRUNNER

In days of old, all the King's horses and all the King's men... plus the royal fortune... couldn't come up with anything better than a simple fan to cool His Majesty's brow.

It took horsepower of another kind ... electricity plus engineering and design knowhow ... to create the modern version of "controlled comfort" produced by Brunner.

In air conditioning and refrigeration, Brunner equipment is unequalled for dependability and long life.

Brunner design engineers "cut the cloth to fit the coat"... they design the product to meet specific performance standards.

That's why it's always wise to "sell Brunner"... because Brunner design engineering means better performance and lasting satisfaction for your customers.



Compressor Experience
Product Research
Design Engineering
Wide Product Range
Proven Quality
Complete Dependability
Easy Servicing
Warrantee Performance
Nearby Distributor Service
Profit Opportunity
Advertising Support
Sales Promotion Help



BRUNNER REFRIGERATION CONDENSING UNITS

for remote air conditioning installation in commercial and industrial applications, are supplied in sizes up to 75 H.P. with capacity control. Brunner Compressor Units for use with evaporative condensers also available up to 75 H.P.

The Brunner Compressor does more work with less motion. It's huskier than most ordinary compressors . . . larger pistons . . . longer strake . . . bigger crank case . . . deep-finned heads. These construction features result in a quieter, more efficient compressor that gives extra years of service . . . with less wear on working parts, less maintenance, lower operating costs.

See your Brunner Representative for full information, or write to:

BRUNNER MANUFACTURING CO., Dept. G-255, UTICA, N.Y.
The Brunner Co., Gainesville, Ga.

In Canada: Brunner Corp. (Canada) Limited, Toronto, Ontario

Circle No. 4 on Reader Service Card

FEBRUARY, 1955 . COMMERCIAL REFRIGERATION

Commercial Refrigeration & Air Conditioning

FEBRUARY 1955 . VOLUME 12 . No. 2

THIS ISSUE

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- 32 THE FOOD SERVICE FIELD? IT'S A NATURAL . . . for the dealer who has specialized in food market installations. Here's how to crack it.
- 36 DAILY DIRECT MAIL GETS DAILY RESULTS . . , for this dealer who sells reach-in beverage coolers by following up liquor license lists.
- 38 PLANNING EVERY DETAIL . . . is of utmost importance in handling institutional food service installations. Here's a case in point.
- 42 SHOW YOUR CUSTOMERS HOW TO MAKE MONEY . . . that's the sound sales philosophy which has helped this dealer sell soft ice cream freezers.
- 43 STORY OF A "FIRE SALE" . . . tells how a tavern fire resulted in boosting one dealer's sales of automatic ice cubers.
- 44 CHANGING TRENDS . . . in food service operations spell increased profits for refrigeration dealers. Here's how to cash in on these developments.
- 46 BALANCING THE REFRIGERATION SYSTEM . . . with the aid of proper flow control devices. Part 1 of a six-part series by an authority on this subject.

Air Conditioning Section

- 91 ENGINEERING KNOW-HOW IS THE ANSWER... to the price-cutting problem in the packaged air conditioning field, this dealer has found.
- 92 A HIGH PRESSURE SYSTEM . . . enabled this old hotel to install air conditioning with a minimum of lost space and building alterations. Contractors take notel
- 93 JURY VOTES FOR COOLING , , , and a packaged unit keeps members comfortable while they deliberate on the autoome of court cases.
- 94 THIS DEALER IS "SOLD" ON PACKAGES . . . and he installs them in many places where central station equipment might seem the obvious answer.
- 96 SELL SOUND CONTROL ON AIR CONDITIONING INSTALLATIONS Here's a sales slant you can use when all else has failed. It may save you many a sale.

DEPARTMENTS

It's the Law!	Here's How
About People	Contractor News
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Commercial Sales News 50	New Products 102, 11-
Applications Manual	Index to Advertisers

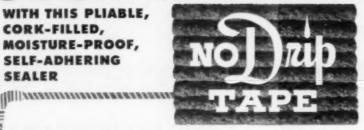
Subscription rates: United States and possessions — \$3.00 per year, \$5.00 for 2 years; Canada — \$4.00 per year, \$6.00 for 2 years; Single copy price, 30 cents. Foreign subscriptions \$5.00 per year, except the United Kingdom. United Kingdom subscriptions £1.10 per year, payable in Sterling to our London Office. All subscriptions subject to Individual acceptance by the publisher.

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Put a PERMANENT

to Condensation Drip **Rust and Corrosion**

WITH THIS PLIABLE, CORK-FILLED, MOISTURE-PROOF, SELF-ADHERING SEALER



Cold water pipe or tubing condensation drip is messy, costly, often dangerous. Unheeded, the result is loss of valuable equipment, piping and connections rust and corrode, requiring frequent replacement, and hazardous conditions exist.

NoDrip Tape has been successfully used for years to correct and control this needless waste. Easily applied by winding spirally around pipes and tubing, NoDrip Tape becomes a permanent sealed jacket...without "extra" vapor-seal tapes or overwraps. Requires no bands, brads or fasteners because it's self-adhering. In addition, NoDrip Tape holds temperatures more steady, reduces icing and frosting of lines. Equally effective on any pipe or tubing, iron, brass, copper or other alloy.

Typical Coverage Per Roll 10' of 1/3" I.D. Iron Pipe: 8' of 34" 61/2' of 1" O.D. Copper Tubing: 13' of 1/2" 11' of 56" 91/2' of 34" 81/2' of 34" list a roll Higher west

FREE! Bulletin D-40

of Rockies and Canada. (Subject to usual trade discounts)

J. W. MORTELL COMPANY 553 Burch St., Kankakoe, III., Dept. 2

Please send me FREE copy of Bulletin D-40

City.....State.....

Circle No. 5 on Reader Service Card

Established in 1944 as THE REFRIGERATION INDUSTRY, this magazine has no official offiliation with ony group, society, or association.

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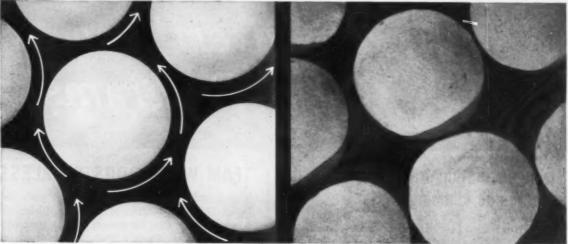


blished monthly by The Industrial blishing Group, A Division of Tele-ws Productions, Inc., which also

FLOW APPLIED HYDRAULICS INDUSTRY & WELDING WELDING ILLUSTRATED OCCUPATIONAL HAZARDS PRECISION METAL MOLDING MATERIAL HANDLING ILLUSTRATED

THE PROPERTY OF THE PROPERTY O

acid causes refrigeration system breakdown!



Pelletized spheres distribute flow, eliminate channeling.

Greater surface area traps more acids and moisture.

AN.DRITE

(ANSUL-TREATED 100% ACTIVATED ALUMINA)

removes acid!

Activated alumina in pellet form makes Ansul's new Andrite the double-duty desic-cant. Its thousands of fast drying surfaces dry deeper—pulling moisture content way down. But even more important, Andrite removes acid, cleans up the chemical condition that causes sludge and corrosion—the major cause of refrigeration system breakdowns.

Designed for the revolutionary Ansul T-Flo Drier, Andrite won't break down or dissolve to plug filters or damage compressors. And the drier is easy to install, too. Even replacement of the drier cartridge saves time, because it screws in like a light bulb. And no tools are needed. For fewer callbacks, speedier servicing, change to Ansul. And be sure to give new equipment double protection in acid and moisture removal. Use Ansul T-Flo Driers with Andrite.

For more information or answers to your refrigeration problems write to: Ansul Chemical Company, Refrigeration Division, Dept. D-2, Marinette, Wisconsin.

DuPont "Frean," non-foaming ails, sulfur dioxide, methyl chloride



Circle No. 6 on Reader Service Card



SCREWS IN LIKE A LIGHT BULB!

WATCH THE G-E PACKAGED AIR CONDITIONER SALES SCOREBOARD!

G-E Dealers Score More Often with Advertising Programs

Strongest national and local back-up keeps sales climbing faster!

General Electric and its distributors make the most of every advertising opportunity to help G-E Dealers gain in sales at a faster rate than the entire industry. Just look at the line-up of aggressive advertising programs that G.E. puts behind its dealers' efforts every month of the year!

- National ads build G. E.—and YOU! Multimillion dollar campaigns in leading national magazines put the tremendous drawing power of the name "General Electric" behind you...local prospects know you are the man to see when they want the best in air conditioning!
- 2 Strong local advertising. A wealth of in-season, out-of-season and dealer announcement ads all ready to go to work for you.
- 3 Radio and TV commercials for local use. Hard-hitting spots that pack real sales punch in as little as 20 seconds! All ready to use.
- 4 Local identification aids. Decals, banners, signs and unique "use-the-user" device show prospects you are "Mr. G-E Air Conditioning" in your community.
- 5 Packaged direct mail campaigns. G.E. handles complete direct mail campaigns for you. And for other local mailings, G.E. provides you with a tremendous barrage of sell-packed pieces.
- 6 Sales helps speed salesmen training. Even an untrained man soon becomes a valuable part of your organization with G.E.'s sales helps and programs for selling specific markets. Saves you time and money!
- 7 Telephone directory listings. Another powerful tool that really tells prospects you're in business.

TEAM WORK BOOSTS SALES!

The chart below shows you what team work between G.E., its distributors, and its dealers is accomplishing. One big reason for this amazing growth: the strongest advertising program in the industry!

- . . . and here are three more reasons why:
- **G-E Finance Plans**: Five big finance plans for both prospects and dealers! Easy terms keep your capital free... make easier sales...keep profits high!
- G-E Saleability: Dozens of exclusive engineering features plus an unmatched five-year warranty protecting entire refrigeration cycle!
- G-E Multiple Sales: G-E dealers get large installations! All installations are handled by franchised distribution.



Get on the winning team now!

For full information call your nearest G-E Distributor or write: C. J. Rigby, General Electric Co., Commercial and Industrial Air Conditioning Dept., 5 Lawrence St., Bloomfield, New Jersey.

Progress is Our Most Important Product

GENERAL 🚳 ELECTRIC



Packaged AIR CONDITIONERS









Hard selling takes time— **Time** makes selling easy!



To clinch more sales in less time, quote a monthly payment, not a total cash price. Many of your prospects need their working capital and usual lines of credit for current operations. No matter how much they need your equipment, they probably won't sign your order now unless you show them a convenient, practical way to pay. That's the Commercial Credit Plan way. When can we tell you our story? Phone our office in your city or write Commercial Credit Corp., 14 Light St., Baltimore 2, Maryland.



CREDIT

A service offered through subsidiaries of Commercial Credit Company, Baltimore... Capital and Surplus over \$170,000,000 .. offices in principal cities of the United States and Canada.



Boost your Motor Replacement Sales

A Wagner Motor Display Rack is just like a salesman in your shop. It puts Wagner Motors out where your motor replacement-minded customers can see 'em . . . read the nameplate...look over special features. It sells while you're busy with other jobs, other customers.

The Wagner Motor Display Rack is a good-looking salesman, too. It's chrome and cadmium-plated and has a three-color identifying sign at the top. You can get this display rack for only \$9.95 with an order of any 10 Wagner motors in one lot. Jet pump motors, shaded-pole fan motors and standard motors may be included.

So call your Wagner branch today . . . stock up on Wagner motors . . . and put the Wagner Motor Display Rack to work for you.



OR PARTS DISTRIBUTORS

Circle No. 9 on Reader Service Card



by Albert Woodruff Gray

egal problems are an inherent part A of operating any business enterprise. If you are beset by them, you'd better talk to your lawyer. This column, which will appear periodically in the issues of COMMERCIAL REFRIGER. ATION AND AIR CONDITIONING. in no way aspires to serve as legal counsel for our readers. It is prepared, however, by a man well versed in legal practices and opinions, and by presenting digests of actual court cases involving commercial refrigeration and air conditioning dealers and contractors we hope to enable our readers to sidestep some of the legal pitfalls into which they otherwise might unwittingly stumble.

-The Editors

DEFENSE OF USURY IN BANK FINANCING

A partnership in Alabama engaged in the selling and installation of refrigeration machinery and equipment were accustomed to endorse the notes and contracts received from their purchasers and discount them with a local bank. The bank deducted from the amount of these notes 6% for interest, an additional 10% which was credited to a "reserve fund" and credited the balance to the account of this firm.

This "reserve fund" bore no interest and was left on deposit with the bank as security for the payment of these notes under an agreement with the bank that it was not subject to withdrawal so long as the loans exceeded this reserve account.

Without the knowledge of the bank the firm collected three of these notes, failed to pay the money to the bank and in settlement gave the bank a note endorsed by a third party for \$7,500, that being the amount the loans exceeded this reserve fund. Later when the bank sned this third party as an endorser the defense was set up that these transactions were usurious and illegal as they represented payments to the bank for these loans, of interest in excess of the legal

"Admitting that the bank realized more than the legal rate of interest from these transactions by subtracting 10% from the face of the note and holding it in a reserve fund,"

CLEAN



makes Chase Copper Refrigeration Tube - cleaner, easier to install!



WATERBURY 20, CONNECTICUT . SUBSIDIARY OF KENNECOTT COPPER CORPORATION

Certainly, those crimped end seals on Chase Copper Refrigeration Tube keep the tube bright and clean. They seal out dirt and moisture. But that crimp-sealing does far more—it lets you fit Chase Refrigeration Tube through small openings without cutting the tube. The crimped end is the *same* diameter as the tube itself! Installation is easier, the tube stays cleaner!

And Chase Copper Refrigeration Tube comes to you in flat double coils, 50 feet long. It stores conveniently, is light and easy to handle.

An installation of Chase Copper Refrigeration Tube, joined with Chase Solder-Joint Fittings is clean . . . and pressure-tight *for good*. Your Chase Wholesaler has a complete stock. Contact him today.

The Nation's Headquarters for Brass & Copper

by Chicago Buttol Los Angeles Rew York DL Lesis
Ida Chicagonili Grand Repidit Minesales Philologica Sas Francisco
mara Divolund Heurism Minesales Philologica Sastita
sus Dafes Indionagolis Resurk Providents Materiary
ottar? Douver Ransos City, Mar. New Drisens Backester? (1sales office on

Circle No. 10 on Reader Service Card



NEW BEDFORD, MASS SALES OFFICES IN ALL PRINCIPAL CITIES

In Canada: AEROVOX CANADA, LTD., Hamilton, Ont. Expart: Ad. Auriema., 89 Broad St., New York, N. Y. . Coble: Auriema, N. Y.

Circle No. 11 on Reader Service Card

said the court in awarding judgment to the bank, "if the transaction was a purchase by the bank of the commercial paper of the customers of this firm, the transaction was not usurious. The mere fact that the bank purchased the notes at a discount beyond the legal rate of interest does not constitute the transaction a usurious

Berry v. Bank for Savings and Trusts, 14 So. 2d 129, Alabama.

CUSTOMER'S KNOWLEDGE OF DEFECTS

IN the purchase of equipment from a Georgia dealer the sales contract was not signed until a month after the unit had been delivered and used by the buyer. Later when the dealer sued for payment the purchaser contended not only that the sale had been induced by fraud but that there was a total lack of consideration since the equipment was worthless.

"The purchaser had actual knowledge before executing the notes of all the defects of which he now complains," asserted the court in awarding the dealer a judgment for the amount claimed by him to be due under this contract. "This being true there could be no failure of consideration because at the time of executing the contract the purchaser had knowledge of the hidden defects. This knowledge lost him the right to invoke the law of implied warranty and it will be presumed that he contracted for the machine as it then stood."

Taylor v. Lovett & Thorpe Hard-ware Co., 20 S.E.2d 616, Georgia.

PROSECUTION FOR LICENSE VIOLATION

A N ordinance of Minneapolis, Minneapolis, was, "No person, firm or corporation shall bereafter construct, install, alter, repair or service any refrigeration system or equipment in any building or structure within the city of Minneapolis, or engage in or carry on the business in said city of constructing, altering, repairing or servicing refrigeration systems or equipment without having first secured a license from the city council of said city authorizing him or them so to do, and paying a fee and giving the bond hereinafter provided for."

A refrigeration installer holding a certificate of competency as a master refrigerator installer fitted sixty or seventy feet of copper pipe leading from condensers in a cooling system to valves in the pipes of the municipal water system.

A charge was made against him not only for a violation of this ordinance but of a second ordinance that, "No person shall make any extension to or alteration of any pipe, fixture or plumbing connected with the water

system of the City of Minneapolis without such person be a duly licensed plumber nor without having first obtained from the Superintendent of the Water Works a written permit so to do."

The defense was that as a master refrigerator installer he had a right to connect these pipes to the openings left for that purpose which was a part of the installation of a refrigerating system which he was authorized to make.

Found guilty and fined \$50, this man appealed to the Supreme Court of the state. In setting aside this conviction that court said,

"In order to obtain the necessary water from the water system he connected the pipes to the valves left for that purpose. He did not cut into any water distributing pipe forming a part of the city water system.

"Neither can we perceive that what he did could be interpreted as detrimental to the public health or welfare. To say that under such circumstances he made such extensions or additions as to bring him in violation of the ordinance in question appears to us to be too narrow or limited a construction of the ordinance. It verges on saying that a property owner connecting a sprinkling hose to a faucet left on his house for that purpose would be extending or adding to the municipal water system."

ing to the municipal water system."

State v. Finley, 64 N.W.2d 769, Min-

WEATHER OR NOT



CORROSION TESTING of finishes and coatings is made easier and quicker by a newly announced test cabinet manufactured by G. S. Equipment Co., Cleveland manufacturer of plating equipment. "Picture windows" make possible progress tests without opening the lid, or interrupting the process in any way. Electric heater elements are housed in water-jackets at front and rear of the cabinet's exterior.

BUY FROM YOUR REFRIGERATION WHOLESALER



HOW

statistical quality control

KEEPS "FREON"* REFRIGERANTS THE QUALITY STANDARD OF THE INDUSTRY

Statistical quality control is a scientific checking system which continuously assures highest standards for "Freon" safe refrigerants. Here's how it's used: once a sample of "Freon" has been analyzed for a particular property (e.g., dryness), the result is plotted on a chart which shows the narrow limits we set as standards.

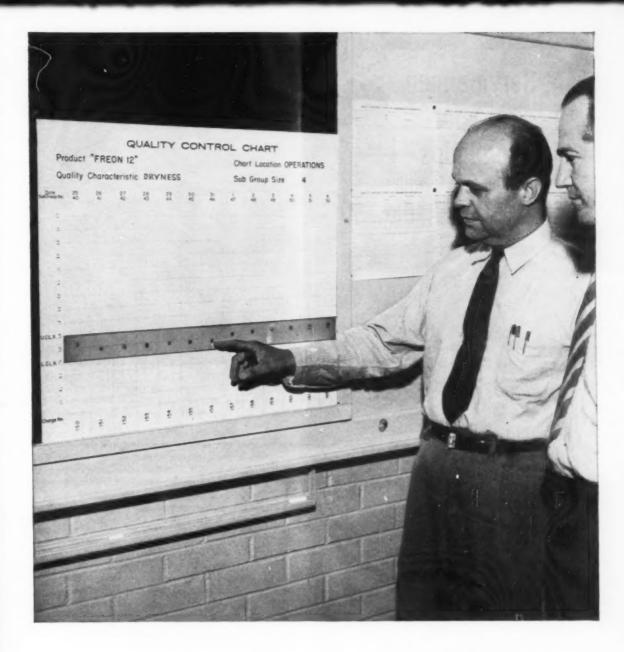
Naturally, all samples must fall within these limits before a "Freon" production run is approved. This means each succeeding lot must measure up to exact requirements . . . assures you of pure, uniform refrigerants of highest quality in all container sizes.

Statistical quality control insures that "Freon" refrigerants meet specifications more strict than those published. You can't buy drier refrigerants. You can't buy them with less non-condensable gases. It's another example of the care Du Pont takes in manufacturing "Freon" refrigerants—and has for the past 23 years. And it's another reason why "Freon" refrigerants are the quality standard of the industry. E. I. du Pont de Nemours & Co. (Inc.), "Kinetic" Chemicals Division, Wilmington 98, Delaware.

STATISTICAL QUALITY CONTROL
HOLDS "FREON" REFRIGERANTS WELL WITHIN THESE
RIGID SPECIFICATIONS

"Freon" Refrigerant	Maximum Moisture Content (BY WEGHT)	Maximum Non-condensable gases (BY VOLUME)	Acids
"FREON-12" dichlorodifluoromethane	0.0010%	1.5%	none
"FREON-22" monochlorodifluoromethane	0.0010%	1.5%	none

Boiling-point ranges are confined within limits of 0.9°F.



STATISTICAL QUALITY CONTROL takes its final form on a chart where analyses of samples can be closely examined. Note how the plots for each sample fall within the limits on the chart above. Art Hawkinson, quality-control supervisor, points out results to Bob Bowman, production supervisor.



SAFE REFRIGERANTS

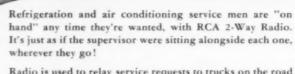
*"Freen" is Du Pont's registered trade-mark for its fluorinated hydrocarbon refrigerants



BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY

Service men

"at your
fingertips"
...all the time...with
RCA 2-Way Radio



Radio is used to relay service requests to trucks on the road and to receive requests from drivers. A truck can be reached whether it's moving or parked. Unusual situations can be handled quickly by two-way conversations between trucks and the office. Regular office personnel can operate the radio—it's just as easy as your telephone.

Wasted service time is reduced. Average minutes per call are cut—up to 18%. Productive truck time is increased—15%-20% more calls daily are possible. Backtracking is made unnecessary. Average miles per call are decreased up to 16%. Rerouting trucks is a simple matter—as the need arises. Service men do a more efficient job. Considerable telephone expense is saved, and customers are enthusiastic about the service—it means money in their pockets!

The RCA Service Company provides installation and service to keep your equipment operating at its peak.

-USE HANDY COUPON BELOW FOR COMPLETE DETAILS---



GET THE BEST—GET RCA 2-WAY RADIO. Quality that only the leader in radio and electronics can offer gives assurance of top performance under the most gruelling conditions. Simplest maintenance and operating requirements.



RADIO CORPORATION of AMERICA

COMMUNICATIONS EQUIPMENT CAMBER, N. J.

Radio Corporation of America, C	ommunications Equipment		
Dept. N-261, Building 15-1, Camd	en, N. J.		
In Canada: RCA VICTOR Company Limited, Montreal			
Please send me literature on RCA 2 Have an RCA Communications spec			
NAME	TITLE		
COMPANY			
ADDRESSCOUNTY			
CITY	ZONESTATE		

best air conditioners under the sun!

STYLED TO SELL!

"Field-tested" economy and dependability in these new large-capacity self-contained units!... available now!

Now Gibson offers commercial models, from 2 to 5 h.p., that are packed with sales features:

Smart, compact cabinet of heavy gauge bonderized steel. Completely insulated...and acoustically insulated!

Quiet, comfortable circulation, thanks to built-in cool air discharge vanes located out of sight in cabinet top. They give extra efficiency, and draft-free cool air flow.

Automatic controls are easy to set. Plus manual controls to reduce humidity without over-cooling!

Economy, with efficient water-cooled condenser, and package-type system that slides in and out for easy servicing.

Clip the coupon

send for all the facts on Gibson's new Central Air Conditioning systems.

GIBSON REFRIGERATOR COMPANY • Greenville, Michigan
MANUFACTURERS OF REFRIGERATORS • ELECTRIC RANGES
FOOD FREEZERS • AIR CONDITIONERS

78 years of experience and millions of satisfied customers mean you can always rely on Gibson!



GIBSON REFRIGERATOR COMPANY Greenville, Michigan

Please rush full facts on Gibson's new Central Air Conditioning units.

Name

Firm....

City State

P.S. I am interested in becoming a distributor and would like to know what territories are open. ()

Circle No. 15 on Reader Service Card

"Now is a good time to bring your Lehigh file up to date"-

says the LEHIGH TEAM



Catalog of Systems and Units for REFRIGERATED TRANSPORTATION

Complete information and specifications on Lehigh's new PACKAGED UNITS for fleet owners, carriers, body builders, refrigeration contractors. Also includes Lehigh REMOTE TYPE truck units.

Catalog of Lehigh's new HERMETIC CONDENSING UNITS

Lists and gives full details on 10 models for new equipment and service replacement. Included is internal construction detail on what many consider to be the most reliable mechanism on the market.



Complete Catalog of Lehigh OPEN TYPE CONDENSING UNITS

Illustrations, capacities and specifications of all Lehigh A.S.R.E. rated air cooled units, water cooled units, airwater cooled units 1/4 H.P. thru 5 H.P.

You'll want, elso, Lohigh's new Parts Price List and Interchangeability Tables, Unit Price Lists, catalog and information on Lehigh Automatic Defrost Units, and other impartant materials. Any or all are yours for the asking! See your Lehigh jobber or write.

Police Burcon

ehigh

CONDENSING UNITS AND SYSTEMS Lehigh Manufacturing Co., Lancaster, Pa.

DIVISION OF Lehigh, The.

Export Dept. 13 E. 40th St., New York 16, N. Y.

Circle No. 16 on Reader Service Card

MANUFACTURERS OF Malleable & Grey Iron Castings Refrigerating Equipment Air Valves **Automatic Vending Machines**



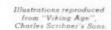
Bronze gxe 4s actual size



Iron spear point

unquestionably

Knife of bronze 1/6 actual size



Axe of bronze, gold and amber — 1/6 actual size





The rugged design and careful craftsmanship make these early weapons easily recognized as being unquestionably Viking!

The Vikings were a proud race - their weapons were highly prized and painstakingly fashioned. These pioneers of old set rigid standards of excellence for their arms - standards that produced weapons and armor far superior to those of their contemporaries.

Today, in the commercial refrigeration and air conditioning industry, the finest copper tubing available is unquestionably VIKING!

By its quality, its strength and its precision perfection, VIKING copper tubing has set a standard for the industry. With a pride of achievement worthy of their namesakes, VIKING craftsmen work constantly to produce the very finest copper tubing . . . a tubing worthy of the name VIKING.

Spear point of bronze — 1/2 actual size



IKING copper tube co. CLEVELAND 10, OHIO

PRECISION DRAWN SEAMLESS COPPER AND ALUMINUM TUBING

STRENGTH THROUGH ANNEALING



Viking copper tube is annealed with precision uniformity is electric annealing furneces. The uniform temper insures speedy, efficient, trouble-free fabrication and strength.

EASY TO BEND AND FLARE



Whatever the application, Vik ing copper tube makes the work go faster because it is easier to fabricate. Viking refrigeration tubing is soft and pliable—can be formed, flared and expanded quickly without danger of frac-turing and splitting.



Triple-sealed Viking tube avoids trouble before it starts—remains extremely dry and absolutely free of dirt. The seal is made to pass through any opening large enough for the tube itself.

CLEAN AND DRY

Circle No. 17 on Reader Service Card



It's great to be a Carrier Room Air Conditioner Dealer! **Because Carrier Distributors** are extra helpful!

Not one of our Carrier Distributors would ever literally "light a fire" under a prospect. But they know plenty of other ways to put the heat on a customer! They're loaded with air conditioning sales savvy! You see ...

Carrier Distributors know air conditioning!

These men grew up in the air conditioning business! Twentyfive of them have been associated with Carrier for more than twenty years . . . nearly sixty of them for ten years! They're the industry's most experienced distributors! And when you deal with them . . .

You have the Carrier name to sell!

Carrier doesn't make light bulbs, TV sets or phonograph recordsjust air conditioning! They're the people who know air conditioning best! And Carrier Room Air Conditioners show it . . . from slim silhouette styling to the weather-armor cabinet . . . from corrosion-proof coils to the exclusive cooling reservoir!

Want to know more about the Carrier Room Air Conditioner .. and what it's like to be a Carrier Dealer?

We've made up a special issue of a magazine that's usually reserved for Carrier Dealers only ... "Inside Carrier." It's packed with selling ideas and plans for 1955 . . . plans which you should know about!

> Mail coupon for GIANT "Inside Carrier"!

LOOK WHAT YOU GET FROM THE CARRIER DISTRIBUTOR!

- · Financing and warehousing plans to ease your inventory problems!
- · Four retail financing plans designed to make payments painless!
- · Advertising and promotional plans custom-built to your needs!

LOOK AT THE PRODUCTS YOU HAVE TO SELL!

The Carrier Room Air Conditioner illustrated below has universal appeal! Carrier was first with "multi-mounting." You can install the new 1955 Carrier almost flush with the sill; you can install it in basement, casement, wall, or even through a transom!



air conditioning . refrigeration . industrial heating

CARRIER CORPORATION 321 S. Geddes St., Syracuse, New York

I want that GIANT Room Air Conditioner issue of "Inside Carrier" and the name of my nearest Carrier Distributor. I'd also be interested in finding out more about:

Carrier Residential Weathermakers

Carrier System Weathermakers
Carrier Icemakers

Carrier Self-contained Weathermakers

Name

Street

City.

Circle No. 18 on Reader Service Card



DISTRIBUTORS ... DEALERS ... HERE IT IS!

in all the world...the

Price!

Detuchable 2½ gallon mix reservoir



AN HOUR

• Easy! As simple as serving a soft drink.

serves

- Produces shakes and malts at low cost high speed—big profits.
- Giant capacity with 2½ quart refrigerated reservoir and 2½ gallon detachable mix reservoir.
- Sanitary! Direct from dispenser to customer. No handling. No contamination.
- Has famous exclusive Freez-King features, including continuous freezer action and "Seeing Eye" dial.
- . 5 year warranty on compressor unit.

2 NEW MODELS FOR THE ECONOMY MARKET by FREEZ-KING





BIG MONEY

Lunchrooms Drive-ins Supermarts Theaters Drug stores Bus stations

oms Burger stands
Skating rinks
rts Amusement centers
Military canteens
res Grocery stores
ons Industrial Cafeterias
... and many others

Model 150 SETVES SOFT ICE CREAM OF FROZEN CUSTARD

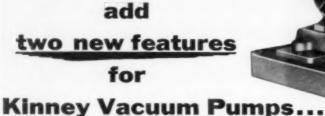
- Sales of a few gallours (tinky con pay be mailment in a few weaths.
- Uses less power costs lies to aperate
- Requires only four square foot of floor
- Easy to clean! Yakes only 5 to 10 minutes instead of the usual 52 to 155 hours.
- Action is continuous. Fracear reservoir surtematically refills with mix as followed product is drawn off.
- "Sooing Eye" dial shares it product is at proper serving consistency.
- Compressor warranted for 5 years.
- Choice of spigot (Blustrated) or knife type draw-off gate.

TERRITORIES AVAILABLE FOR MASTER DISTRIBUTORS and DEALERS. Write for details.

THE FREEZ-KING CORPORATION

2518 West Montrose Avenue Chicago 18, Illinois

and NOW





controlled gas ballasting

Kinney Pumps can now be equipped with the Kinney Controlled Gas Ballast valve . . . it prevents vapors from condensing within the pump . . . keeps oil clean for continuous operation. Kinney design controls the amount of gas ballasting air for maximum pump efficiency.

reduced vibration

Kinney dynamic balance has reduced vibration on compound pumps to an acceptable amount for all practical purposes. These pumps are ideal for use on such applications as dollies and carts.

Feature for feature, no other vacuum pumps can match Kinney. Standard equipment in the major plants manufacturing and servicing refrigeration, air conditioning, and quick freeze units, Kinney Pumps create the extremely low pressures for charging with Freon 22. Kinney also offers self-contained, portable evacuating and charging units for service shops — also Kinney Vacuum Tight Valves for vacuum manifolds in modern refrigeration systems. We have competent vacuum engineers in each of our district offices who will gladly help you.



KINNEY MFG. DIVISION

THE NEW YORK AIR BRAKE COMPANY

3618 WASHINGTON STREET . BOSTON 30 - MASS.

(A) 12

Please send Bulletin V54 describing the complete line of Kinney Vacuum Pumps.

Name

Company

Address

Address

City State

From where

we

sit.

the



FACTORY COOPERATION

right on up to the President! No other company works so closely with you!



DIRECT FACTORY DEAL

ON-THE-SPOT DISTRICT MANAGER

always ready to iron out your toughest problems.

is the finest set-up in the



means your sales will stick. Finest quality components. Fewer service headaches.



business

TYPHOON

Typhoon Air Conditioning Co., Inc. C-8 505 Carroll St., Brooklyn 15, N. Y.

your

chair

Pull up

- I would like to know more about the Commercial Air Conditioners
- Typhoon Franchise. **Home Conversion Units** Room Air Conditioners

Name.

Firm Address.

City_ Zone State



right in your own territory to give you the latest on engineering and selling.

Residential Year-Round Units

Packaged Heat Pumps

TYPHOON AIR CONDITIONING CO., INC.

505 Carrell Street. Brooklyn 15, N. Y.

Circle No. 21 on Reader Service Card



Luther B. Sovde has been appointed district sales manager for



the New York state area, excluding New York City for Research Products Corp. Sovde has had a wide background in merchandising and advertis-

ing and has spent the past four years in the company's home office in Madison, Wis. In his new position, he will headquarter in Rochester, N. Y.

William C. Boismier and C. E "Bud" Ryman have been appointed district sales managers for the Typhoon Air Conditioning Co., Inc. Boismier was formerly with C. Robert Ingran Co., air conditioning distributor in Oklahoma City, and will now supervise Typhoon sales in Oklahoma, the



Texas panhandle, and the Wichita Falls trading area. Ryman was a sales engineer with Central Heating and Air Conditioning Co., a distributor in Houston, Tex. His new territory will include the San Antonio, Houston and Corpus Christi trading areas, and the Rio Grand Valley, with headquarters in Houston. Richard B. Cherry, who has covered the Texas and Oklahoma territories since 1947,

will act as assistant regional manager and concentrate on Central Texas with headquarters in Dallas.

Two district manager appointments have been announced by Mitchell Mfg. Co. J. H. (Jack) Davidson will be in charge of sales in New York, New Jersey, and Connecticut, and D. B. Jones will serve southern New Jersey, eastern and central Pennsylvania, Maryland and Washington, D.C. Jones formerly was with the Coolerator Co. Davidson comes to Mitchell from his post as eastern sales manager for C.B.S. Columbia.

William H. Tonner has been appointed sales engineer for Mor-



rison Products, Inc., it has been announced by Thompson Morrison, vice president in charge of sales. Tonner has spent 16 years in the

heating and air conditioning industry and is widely known.

George S. Wheaton has been promoted to vice president and manager of Eston Chemicals Div., American Potash and Chemical Corp. Wheaton formerly was assistant vice president of that division. Thomas F. Edson, formerly assistant vice president of research and development, has been promoted to the newly created position of vice president in charge of special engineering projects. Richard J. Hefler, secretary of the company, goes into the newly created position of assistant to the president. He will also continue his duties as secretary.

Bruce C. Smith, former senior sales engineer at Carrier Corp.'s Kansas City branch office, has been named manager of that branch. Smith has been with Carrier since 1948.

Two new field appointments have been made by Minneapolis-Honeywell Regulator Co. Art DePuy, who has served the company in various administrative sales positions since 1936, has been ap-





A. DePuy

H. Snyder

pointed assistant regional manager of the central sales region, with headquarters in Cleveland. Howard Snyder, for the past three years a heating control salesman in Milwaukee, has been made manager of the Milwaukee branch office, replacing R. H. Schulz, who has resigned.

Frederick B. Seel has been appointed chief engineer of the Residential Section, Air Conditioning and Refrigeration Div. of Worthington Corp. He will be in charge of design and development of cooling equipment for homes and their adaptation to combination heating and cooling units.

Wallace C. Roberts has been appointed advertising and sales promotion manager of Brunner Mfg. Co. He formerly was advertising manager and assistant sales





W. C. Roberts

P. A. Hunker

manager of American Emblem Co., East Hartford, N. Y. Paul A. Hunker has been appointed sales manager of refrigeration for Brunner, a newly created position. Hunker most recently was north-



Save Time, Money, Effort

with DETROIT Thermostatic Expansion Valves

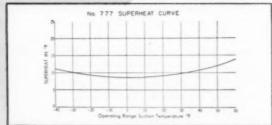
- Capacities 1/2 to 2 tons, F-12 -Standard Valve-1 to 3 tons, F-12-External Equalizer
- "C" and "Z" cross charges available
- Compact, rugged construction
- Mount in any position
- Easily cleaned cartridge needle and seat assembly
- Accessible and easy superheat adiustment
- Large inlet strainer, easily cleaned
- Available with or without external equalizer connection
- External equalizer type easily converted to internal equalizer right on the job.

SPACE SAVER"

With "C" charge . . . the long range valve . . . For both high and low temperature operation.

Actual

Size



THE MOST VERSATILE THERMOSTATIC EXPANSION VALVE

DETROIT



Division of AMERICAN RADIATOR & STANDARD SANITARY Corporation



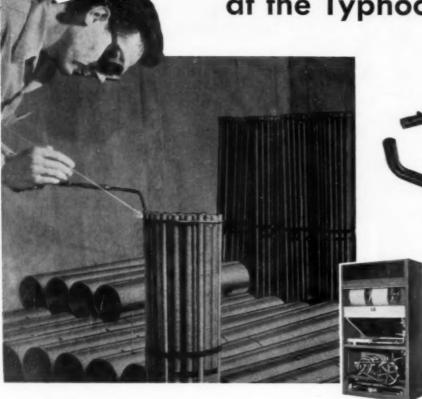
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AUTOMATIC CONTROLS for REFRIGERATION

DOMESTIC HEATING . AVIATION . TRANSPORTATION . HOME APPLIANCES . INDUSTRIAL USES

AMERICAN STANDARD - AMERICAN BLOWER - CHURCH SEATS & WALL THE - DETROIT CONTROLS - REWANZE BUILERS - ROSS EXCHANGERS - SURRÉAM AIR CONDITIONERS

There's nothing like ANACONDA Tubes to cut production costs at the Typhoon Plant



Several examples of the versatility of ANACONDA Copper Tube can be seen in these assorted tube bends fabricated by Typhoon Air Conditioning Co.

Copper tubes in the Typhoon condenser are brazed to the tube sheet, which in turn is brazed to the copper shell. Inset shows location of condenser in Typhoon model 114. 10 H. P. packaged air conditioner.

The workability of ANACONDA Copper Tubes, plus their uniformity of temper, cut production costs for the Typhoon Air Conditioning Company in the manufacture of its highly engineered packaged air conditioning units.

Typhoon takes pride in its all-copper shell-andtube condenser, for instance. From the thick copper shell to the paper-thin tube fins, Anacond Copper makes the big difference. The heavy shell can be easily punched, and collars "extruded" for refrigerant connections. After the tube assembly is inserted and capped with a copper tube sheet, the copper-to-copper construction is ideally adapted to silver-allov brazing.

And then, of course, there's nothing like copper's efficiency for thermal conductivity, nor its suitability for use with both water and hydrocarbon refrigerant. That's why you should insist on Anaconda Copper Tubes and other Anaconda Refrigeration Products by name. The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

for consistent uniformity—ask for

ANACONDA

REFRIGERATION PRODUCTS

Typhoon manufactures a full line of packaged air conditioners, from 2 H.P. to 30 H.P. in size. In all these units, copper plays an important part.



east district manager for the Commercial Refrigeration Division of Servel, Inc. He has had a long background of experience also with G-E, Chrysler Airtemp and Hupp Corp.

R. E. Niedermeier has been appointed manager of the Kansas City



office for Sporlan Valve Co. He will cover Montana, Wyoming, Colorado, New Mexico, Kansas, Nebraska and parts of Missouri and Iowa. Niedermei-

er was formerly service manager of one of the major manufacturing companies in the industry.

George F. Robinson, former manager of Carrier Corp.'s St. Louis unitary equipment branch sales office, has been named assistant sales manager, residential air conditioning, with headquarters in Syracuse, N. Y.

Bruce C. Hammerschmidt has been elected to the board of directors of Copeland Refrigeration Corp. Hammerschmidt is a partner of the law firm of Hammerschmidt & Johnson, South Bend, Ind,

Richard M. Scott recently has been appointed sales representative



R. M. Scett

and J. H. Smith has been named east central district sales manager for Wolverine Tube, Div. of Calumet & Hecla, Inc. Scott will call on Wolverine's

wholesaler accounts only in Wayne County, Mich. His headquarters will be in the firm's general sales office in the Guardian Bldg., Detroit. Appointment of Laurence J. Bonhotal as service manager of the Ice Machine division of American Gas Machine Co., has been announced. Bonhotal will be responsible for setting up and directing the company's newly-formed service departments. He was formerly assistant national service manager and application engineer of Remington Corp.

Howard G. Haas has been appointed vice president in charge of advertising and sales promotion for Mitchell Mfg. Co. Haas has been with Mitchell since 1950 as director of advertising and sales promotion.

Frank C. Hawco has joined Sporlan Valve Co's field sales or-



ganization. Working out of the company's Mt. Vernon, N. Y. office, he will provide additional coverage for the greater New York City and

New Jersey area. Hawco is a graduate of Northeastern University and has had extensive experience in the refrigeration and air conditioning field.

E. L. Hiter has been appointed sales manager of the expansion joint division of Flexonics Corp. Hiter has 14 years of company experience in metal hose and bellows type expansion joints. He has served as western manager and has held several other sales administrative positions in the central and field offices.

Jack Kerr has been appointed advertising manager of Kerotest Mfg. Co., Pittsburgh manufacturer of valves and fittings. The appointment was announced by W. T. Clawson, advertising manager of Miller Printing Machinery Co., of which Kerotest is a division.

Roger P. Kipp of St. Louis has been appointed representative



for Larkin Coils, Inc., Atlanta, according to J. E. Palmer, sales manager for Lark. Kipp will cover Missouri, Kansas and southern Illinois. Before

organizing his own sales agency, the Roger P. Kipp Co., Kipp was manager of the Controls Div. of Jackes-Evans Mfg. Co., and earlier was general sales manager of Alco Valve Co.

A. L. Register, formerly in the Chicago office of Connor Engineering Corp., has been named sales manager of the Residential Air Diffuser Div.

A series of changes in its district sales organization has been an-



A. J. Nelson has resigned as district manager with headquarters in Denver, Colo. O. C. Yates, the company's

nounced by

Tecumseh

Products Co.

northwestern district manager with headquarters in Seattle, will take over the states of Idaho, Montana, Wyoming, Utah, and Colorado, formerly handled by Nelson. L. J. Freitas, with headquarters in Dallas, Tex., will now cover the state of New Mexico.

Several changes have been made in the executive management of Worthington Corp. Hobert C. Ramsey, president, now becomes chairman of the board. Edwin J. Schwanhausser, executive vice president and member of the board of directors, becomes president. Walther H. Feldmann, vice president of sales, becomes the executive vice president. Thomas KRAMER
UNICON

FOR

SUPERMARKETS

FOR BULLETIN U-29

ONE UNICON
serves up to 16 compressors
WITHOUT A DROP
OF WATER*

KRAMER TRENTON CO. - Trenton 5, N.J.

J. Kehane, assistant vice president and general sales manager, succeeds Feldmann as vice president of sales. Charles A. Butcher has been named vice president for planning. Fred J. Blacker has been appointed manager of original equipment sales, air conditioning and refrigeration division.

Walter R. Dwyer has been appointed eastern regional air condi-



tioning manager for Servel, Inc. Dwyer, formerly zone manager in the Pittsburgh area, will now be in charge of sales and service in 14 eastern

states with headquarters in New York. Before joining Servel in 1953 he was an engineer for two different air conditioning contractors in New York.

A. E. Pearce has been named general sales manager of the new



A. E. Pearce

vision of Armstrong Cork
Co. The new
division is
composed of
two departments — industrial insulation with J.W.
Liddell as
manager; and

insulation di-

equipment insulation, headed by L. E. Cover. The new departments were created out of the building materials division. Pearce joined Armstrong in 1927 as a salesman and has handled various managerial positions.

Jay J. Fritzler has been appointed sales representative for Jordon Refrigerator Co. Fritzler will cover Montana, Wyoming, Idaho, Utah, Colorado, New Mexico and Arizona. Formerly Fritzler was a salesman and merchandise manager for a jobber in the mountain states area.

Two new changes have been announced by unitary equipment division of Carrier Corp. Roy Lansing, assistant to John M. Bickel, vice president of the division, has been made assistant to L. M. Ross, manager of the Chicago district office. Fred Williams, staff assistant has been named merchandising specialist for room air conditioners and automatic ice makers in the Philadelphia district.

BUY FROM YOUR REFRIGERATION WHOLESALER

John A. Morgan has been elected vice president of Glass Fibers, Inc. and appointed general manager of the western division. Morgan has been manager of the transportation product sales for the company.

American Blower Corp. has announced the appointment of **Deane H. Wilson** as credit manager. Wilson worked in the credit department from 1941 to 1949, at which

PA-400

DAVISON'S NEW Refrigeration Desiccant

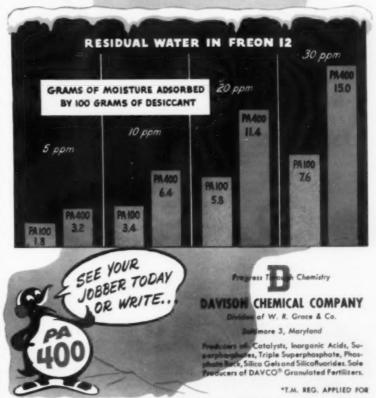
WITH GREATER MOISTURE ADSORPTION CAPACITY

Up to 98% increase in moisture capacity

The Davison Chemical Corporation has long been a leading producer of refrigeration desicants and the manufacturer of PA 100 — the top desicant in the field. Now, after many years of research, they have produced PA 400 — a refrig-

eration desictant with a greatly increased adsorption capacity.

Tests run on the moisture adsorption capacity of PA 400 in Freon-12 in comparison with Davison's PA 100 show up to 98% increase in capacity.



time he left the company to take a position as credit manager of Evans Products Co. He held this position until taking over his new responsibilities with American Blower.

Ralph A. Rockwell has been appointed chief engineer for the Minneapolis-Honeywell Regulator Co. valve division. Rockwell was formerly technical consultant to the division and will continue to serve as advisor to the division's sales and engineering departments.

Three new field sales representatives have been announced by General Electric Co.'s air conditioning division. Vernon Hagmann will handle the Weathertron in the central region. Leland D. Krape will handle home heating and cooling department products in the south central region. Francis R. Vanlandingham will also handle the home heating and cooling products, but in the southeastern region.

BUY FROM YOUR REFRIGERATION WHOLESALER

Appointment of James E. Hailey as national sales manager for the



air conditioning equipment
manufactured
by Bal-Air,
Inc., Nashville,
Tenn., has been
announced by
John Wilson,
president of
the firm.
Hailey form-

erly was associated with McQuay, Inc., as field representative operating out of Kansas City, Mo.

Charles H. MacFarland has been appointed director of research for Eureka Williams Co. MacFarland has more than 21 years of engineering and design experience.

Trane Co. has announced the appointment of George C. Wilson as assistant development engineer in the engineering department, heat transfer section.

Three new appointments have been announced by McCray Refrigeration Co. Hugh E. Cooper will be general manager of sales, Clarence H. Ziebell will be administrative sales manager and Glenn W. Mathis will be chief refrigeration engineer. Cooper for-



H. E. Cooper

C. H. Ziebell

merly was midwestern divisional manager for Tyler Refrigeration Corp. and later sales manager for Tyler's Harder Freeze Div. Ziebell has 34 years working for McCray in both the accounting and sales departments. Mathis, also formerly with Tyler, served as assistant and chief engineer at the Waxahachie plant before joining McCray.

PAUL SHIRK REFRIGERATOR SERVICE HIS 720 YALE AVE., FRESNO, CALIF. October 21, 1954 STANDARD Highside Chemicals Company, Clifton, New Jersey. DRYING Gentlemen: For a long time I have meant to let you know how much I appreciate your product PROCEDURE: Thowsons". I was instrumental in getting a local re-frigeration supply house to stock Thawsone beginning in 1808. Since then I have added Thawsone to probably over one thousand sealed and open refrigeration units. As of this time I have not seen one case of trouble which can be traced to Thawsone. I was instrumental in getting a local re-CAREFUL **VORKMANSHIP** My bottle of Thawsone suffices for a large stock of dryers which I do not have to carry snock of dryers which I do not have to carry and, as your ada say, gets plenty quick re-sults. It is rather gratifying to be oble to do a difficult job easily, quickly and per-mently. Without Thuwsone I would not sell nearly so sure of the results I could accomplish. AND THAWZONE Very truly yours. Poul Shirk

THAWZONE SAVES VALUABLE TIME

You know from experience that other methods usually need a considerable amount of time in order to clear up moisture. That's NOT the case with Thawzone, since it travels quickly throughout the entire system, searching out all moisture and DESTROYING it. This action takes minutes... not hours.

The use of Thawzone not only saves your valuable time, but avoids annoying call-backs due to recurring moisture conditions. At the same time, Thawzone neutralizes acids formed by the constant breakdown of oil.



- 1. Actually destroys moisture . . . not a mere anti-freeze.
- Scavenges oxygen . . . the only product that eliminates this corrosion-causing chemical.
- 3. Cannot cause pressure drop.

all am

- 4. Cannot clog with oil.
- 5. Does not release moisture when temperature changes.
- May be used in open or hermetic units containing "Freon", methyl chloride, methylene chloride, or isobutane.
 Costs only about 8 cents per lb. of refrigerant treated.

THAWZONE"

The Only Product That DESTROYS Water and Reaches ALL of it

You can use Thawzone in practically any "Freon" or methyl unit. Your wholesaler has Thawzone. Phone him now. Highside Chemicals Company. 4 Colfax Avenue, Clitton, N. J.

Always Ask for... genetron

Super-Dry Refrigerants



QUICK FACTS ABOUT

genetron

REFRIGERANTS:

- · Super-Dry: guaranteed exceptionally low moisture content
- · Non-corrosive to standard equipment materials
- · Non-toxic, non-flammable, stable, safe
- · Critical and freezing points are well outside range of operating uses
- · Solvent action on oil helps prevent solidification or congealing of lubricant
- · Miscible with oil; aid in lubrication of equipment

genetron 11-ORANGE LABEL TRICHLOROMONOFLUOROMETHANE

genetron 12-WHITE LABEL DICHLORODIFLUOROMETHANE

genetron 141-GREEN LABEL MONOCHLORODIFLUOROMETHANE

For further information on "Genetron" Super-Dry Refrigerants-see your wholesaler, or write or phone any General Chemical office listed below.



GENERAL CHEMICAL

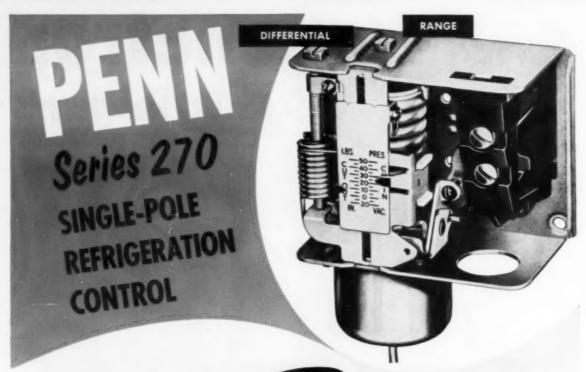
ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Offices: Albany - Atlanta - Baltimore - Birmingham - Boston - Bridgeport - Buffalo - Charlotte Chicago - Cleveland - Denore - Detroit - Greenville (Miss.) - Houston - Jacksonville - Kalamazon Los Angeles - Minneapolis - New York - Philadelphia - Pittsburgh - Providence - San Francisco Scattle - St. Louis - Yakima (Wash.)

In Wisconsin: General Chemical Company, L., Milwaukee
In Canada: The Nichols Chemical Company, Limited - Montreal - Toronto - Vancouver

Circle No. 27 on Reader Service Card



How simple can installion get? Take a look at the three steps detailed at right! And adjusting is simpler still! Because of Penn's direct-reading, calibrated scale indicating cut-in and cut-out settings, there's no time-wasting subtraction or addition. And that's not all — the Penn 270 Single Pole Refrigeration Control combines this simplicity with low cost and top performance. Your wholesaler can tell you all about its money-saving time-saving advantages. Penn Controls, Inc., Goshen, Indiana.



Series 270 available in single or double pole construction with or without external adjusting knob.





- 1. Mount the control on compressor unit or any flat surface (universal mounting bracket furnished).
- 2. Connect flare nut on power element capillary to compressor suction valve.
- 3. Remove control cover and make two electrical connections (terminals are easy to get at).
- 1. Turn range screw to raise or lower cut-in setting as required (differential remains constant).
- Turn differential screw to raise or lower cut-out setting independent of cut-in setting (this narrows or widens differential).

AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

Circle No. 28 on Reader Service Card

TRENDS-OPIXIOXS-REPORTS

ONE SPECIAL PROBLEM faced by Tropic Aire, Inc. in designing the air conditioning system for Greyhound buses (it's a 5-ton system) involved providing a V-belt drive from engine to blower. With space at a premium and no practical means of belt take-up, the problem was solved by Worthington with a special drive consisting of a variable pitch driven sheave, a quick-detachable driver sheave, and oil-and-heat-resistant steel cable belts. The variable pitch sheave provides proper belt tension which is maintained during operation of the unit because the steel cable belts do not stretch. It is interesting to note that the average bus air conditioning system operates 2500 hours per season.

TO INCREASE SALES of frozen poultry, place the products as near as possible to where the house-wife makes her decision on fresh poultry. This is the advice of Herman I. Miller, deputy director of the poultry division of the USDA agricultural marketing service. He pointed out, however, that the placing of frozen poultry next to the unfrozen counterpart would require competitive pricing at the retail counter. Poultry consumption in this country, he said, has increased from 18 lbs. per capita in 1934 to 30 lbs. per capita in 1953.

AN UNEXPECTED DIVIDEND came to the swank Chalfonte-Haddon Hall hotel in Atlantic City when it air conditioned the squash courts on the top floor of the building. Besides the added comfort of playing in a uniformly pleasant temperature, players found that the dehumidified air causes the squash ball to bounce more accurately off the walls and court floors, eliminating excessive ball action. The result is a more scientific game with faster action. Each of the hotel's two courts is air conditioned by a 5-ton system.

PREPARATIONS FOR THE MAKING of crystals from orange concentrate have been moving ahead recently. According to officials of the manufacturer, the new product can be kept indefinitely on grocers' shelves and can be shipped without refrigeration. Frozen concentrate is used in the crystalizing process because large quantities can be stored to assure all-year operation.

AIR CONDITIONING LIVING rooms for homes in the \$10,000 bracket are provided as standard equipment in a new housing development being built in California. Each of the ranch-style three-bedroom homes in the development is equipped with a 3/4 hp room air conditioner built into the living room wall. One hundred units have been delivered.

A NOVEL APPLICATION of Freon-12 refrigerant was reported recently by the National Advisory Committee for Aeronautics. The refrigerant gas is reported to offer some distinct advantages over air as "wind" in aerodynamic test tunnels. Great power savings are made possible by the gas, since sound travels through Freon-12 about half as fast as it travels through air. This means that the refrigerant must be blown through the test section only about half as fast as air to produce supersonic conditions.

SCIENTISTS HAVE COMBINED the space and weight economies of dehydration with the convenience and freshness retention of freezing to give us a new food-preservation process called dehydrofreezing. It's now in commercial use by six firms, with more showing interest. Developed by the USDA Western Regional Research Laboratory, the dehydrofreezing process consists essentially of: (1) conventional preparation of the commodity as for regular canning or freezing; (2) inactivation of enzymes where necessary, to prevent browning; (3) rapid drying to reduce weight and volume by at least half; (4) packaging and freezing; (5) storage at O F.

The food service field? . .

IT'S A NATURAL...

... for the dealer who has specialized solely in food market installations. A distributor who has been outstanding in both fields tells how to make the transition smoothly and effectively, step by step.

OMMERCIAL refrigeration dealers and distributors are, for the most part, specialists. Some concentrate all their sales efforts on the food market field. Some become experts in food and beverage service facilities. Comparatively few dealers are set up to do an outstanding job in both fields,

With competitive pressure steadily increasing, however, many dealers to whom we have talked have expressed a need and a desire to broaden the scope of their activities. More specifically, we have talked with a number of dealers who up to the present have built their business solely on supplying the equipment and planning facilities for all types of food stores, but who now are beginning to cast longing glances at the business to be had in the restaurant and institutional field in their respective areas.

They have hesitated to enter this field, however, because they were unsure as to what the special requirements might be. They wondered, for instance, just what they would have to add to their organization in the way of personnel, know-how, and physical facilities. They were concerned lest the investment in such factors as trained manpower and inventory might be more than they could handle. They speculated as

to whether the potential business to be had in this field would justify whatever expenses or organizational changes might be necessary.

To find the answers to some of these basic questions, we decided to talk to somebody who had "been through the mill"-who had successfully made the transition these other dealers were contemplating. Cable-Wiedemer, Inc., in Rochester, N.Y., we felt, would be a logical place to get this information.

Here was a firm which had started in business some 20 years ago strictly to sell refrigeration equipment to grocers and butchers. About 11 years ago, however, the firm began to invade the food service field. The complete transition took some 4 or 5 years, but now the company's restaurant and institutional work actually accounts for a somewhat larger share of each year's total volume than does its food market work. in which it is still very active.

So we went to Rochester and we talked with William J. Cable, vice president of Cable-Wiedemer and head of the company's commercial kitchen department.

"Isn't it true," we asked him, "that your company has actually doubled it's business over a period of years by entering the food service field and gradually

building that phase of your operations until it equalled or surpassed your continuing high volume in the food market field?"

"It certainly is," he replied emphatically. "But it wasn't done overnight, and it wasn't always easy. And don't forget that in doubling our volume in this way we have also had to double our inventory. The answer lies in the fact that you don't have to make this big jump all at once. Any dealer can build a business in the food service field just as we have, by easing into it step by step, rather than plunging into it over his head right at the outset."

Knowing that a lot of dealers throughout the country would be vitally interested in learning all of the details as to how this transition could be accomplished smoothly and successfully, we sat down and started to fire questions at Bill Cable. Here are some of the things we found out:

There's another item which can be used equally well by the restaurant owner or the food store operator. And the larger restaurants need walk-in coolers for bulk storage of perishables just as much as do the food stores."

QUESTION: Then a dealer just breaking into the restaurant field should confine himself to just these few items?

CABLE: "He needn't 'confine' himself at all. In addition to these few basic items which can be sold to both the food market and the food service establishment, there are a great number of specialty items such as ice cubers, frozen custard machines, carbonators, or packaged beverage dispensing units, which are natural items for food and beverage service outlets and which the refrigeration dealer already is equipped to sell and service."



"...the food service field is wide open for the refrigeration dealer who is willing to cultivate it."



"... many of the same items sold to food stores also can be used in restaurants, bars, institutions."



"...specialty items like ice cubers and packaged beverage units also fit into the food service picture."

QUESTION: Didn't you find it extremely difficult breaking into the food service field when you'd never done anything but food market work before?

CABLE: "Not at all, doing it the way we did. Actually the two fields dovetail quite naturally, because so many of the same pieces of equipment you sell to the food market you can also sell to the restaurant, the institution, and the bar or tavern."

QUESTION: What types of equipment do you mean, for example?

CABLE: "Oh, there's any number of them, such as reach-ins, walk-ins, freezers, beverage coolers, and the like. After all, the same glass-front reach-in that you sell to the food market as a self-service dairy case you can sell to the restaurant as a back-bar display case for salads and desserts. Or back in the kitchen, with solid doors on it, this same case can be used for bulk storage of these same prepared foods, or of the raw perishables used for food preparation.

"Or take freezers, either upright or chest type.

QUESTION: What about air conditioning?

CABLE: "Well, obviously if a dealer is equipped to sell air conditioning to food stores, there's no reason at all why he can't sell that same air conditioning to food service establishments. It's strictly comfort air conditioning in both cases, and where it's installed doesn't make a bit of difference. Actually, we handle our air conditioning as a completely separate department. That way we don't mix it specifically with either our food market or food service operations."

QUESTION: So far we've just talked about what kinds of equipment a food market dealer could logically sell to food service customers. Now, how should he go about finding those customers?

CABLE: "Really, that's no different in the food service field than it is in the food store field. We used the same tried and true methods — cold canvass, direct mail, personal contact, cooperation with the salesmen of supplies."

Continued on page 34

QUESTION: Can you be a little more specific about how you used those "same old methods"?

CABLE: "Well, cold canvass is cold canvass, regardless of the type of prospect you're calling on. If you're trying to sell equipment to the food service field, you just knock on the doors of food service establishments, that's all. And in the final analysis, probably no more effective means for digging up new potential customers ever was devised.

"Pretty much the same can be said for direct mail. You use the same general techniques that you would in selling to food market operators. You just send your mailings to names in the food service field instead.

"When it comes to cooperating with suppliers, the salesmen who sell food products, china, glassware, silver, pots and pans, and similar supplies to restaurants and other food service establishments can be just as helpful in supplying sales leads to the equipthem well. Often it's a short step from being a good friend to becoming a good customer!"

QUESTION: How about service? Can't that be a big help in providing sales leads in food service, as in any new field a dealer might enter?

CABLE: "By all means. Just as in the food market field, a serviceman who actually gets "behind the scenes" of a food service establishment and works on the equipment is in the best possible position to learn what new equipment the owner needs or is considering purchasing. Sales leads acquired by servicemen in this way are an invaluable aid in building any new phase of a dealer's business."

QUESTION: So far you've made it all sound pretty simple for a dealer to start selling to the food service field, but isn't there a catch to it



"... packaged air conditioners can be sold to every restaurant, diner, bar and tavern down the street."



"... visual selling is just as impressive here as it is in the food market field. Pictures help sell!"



"... scientific knowledge of restaurant planning isn't necessary if you're selling individual pieces."

ment dealer as can the men who deliver baked goods, dairy products, meats, or fresh produce to the food store. Cooperate with them by trading tips, or maybe by rewarding them for leads that result in sales, and you'll find them extremely valuable allies."

QUESTION: Haven't you neglected to elaborate on the angle of personal contact?

CABLE: "No, I deliberately left that until last, because it's probably the most important. It's no secret that more selling in any field is done on the basis of personal contacts than any other way. For this reason, when we went into the food service field we saw to it that various members of our organization joined such groups as the local club manager's association, the stewards and caterers association, and soon, with the company footing the bill for membership. Most of these groups have associate memberships which are open to suppliers, and in this way you have a chance to mix informally with the people to whom you are trying to sell your equipment, and to get to know

somewhere? Doesn't the dealer either have to learn a lot about the restaurant business himself or else hire somebody who does have this knowledge, so that the firm can do an intelligent job of planning the placement of the equipment he sells in the establishment?

CABLE: "Now wait a minute. Maybe you haven't been following me! Remember, we've been talking about selling individual pieces of equipment. And you don't have to have any more knowledge of over-all food service planning to sell a single reach-in case or freezer to a little restaurant than you have a knowledge of complete food market planning to sell that same equipment to the corner grocery.

"It's an entirely different story if you're talking about selling complete restaurant or institutional installations for new or remodeled establishments. Then, of course, a thorough knowledge of scientific food preparation and service methods is a 'must'. But if the average dealer thought that he had to hire a food service expert, set up a separate planning department, and train or hire specialized service personnel before starting to make his first sale to the restaurant down the street, he'd never make the move.

"That's the sort of thing that comes later, as the dealer gradually grows into this new phase of his work. And that's why we speak of taking 4 or 5 years to make the transition, even as we ourselves did."

QUESTION: OK, now that we're straightened away on that, just what should a dealer do during that transition period to prepare himself for full-scale participation in the food service field?

CABLE: "Well, obviously he should make every attempt to school himself and his sales and service personnel as thoroughly as possible in all phases of food service work. This can be done in a number of ways. One of the most effective ways to start is to attend all CABLE: "That depends largely upon individual circumstance, but certainly some line of commercial cooking equipment should be among the first to be acquired. The important consideration here is to try to get good, recognized lines of equipment on an exclusive basis, for this factor can be of tremendous assistance to a dealer trying to build up this phase of his business. In this field, as in others, much equipment is sold on a brand basis. If the head of an institutional cafeteria, for instance, tells the purchasing agent that he wants Blank brand of equipment, and if you are handling Blank products on an exclusive basis, you are bound to get the business."

QUESTION: Getting back again to service problems, are any special shop facilities or personnel required to handle kitchen equipment?

CABLE: Actually, no special facilities are needed. And it's a fairly easy matter to train one of your exist-



"...you can just grow into complete installations and full-line selling of other equipment."



"... we've doubled the size of our business by pushing food service sales as hard as food markets."



"... but it hasn't always been easy! It has taken plenty of careful planning and hard selling."

food shows, restaurant shows, and institutional shows possible, both on a local and a national level, for this presents one of the best opportunities of talking to food equipment manufacturers and their representatives. Conscientious reading of trade publications can add greatly to this steadily increasing store of knowledge.

"Also, sending selected men to "short courses" at schools like Michigan State College, or Cornell University, which offer excellent training in food service and institutional selling, can do much to provide a solid background for this type of work.

"Furthermore, as each new line of food service equipment is added, it is the dealer's responsibility to make sure that representatives of the manufacturer come in to conduct instructional meetings for both sales and service personnel, so that they can acquire a thorough understanding of the products which they will be handling."

QUESTION: Speaking of new lines, just what type of products should a dealer start to add as he becomes more active in the food service field? ing servicemen to handle the new items of equipment you may add, if these men are made to study factory service manuals on this equipment and work with manufacturers' service representatives in the field.

"The important consideration here is the fact that service can be a main sales point if you capitalize on it properly. Every dealer should be prepared to adequately service any piece of equipment he sells. We discourage any outside service work, however, unless it looks like it might prove a good entree to a new prospect.

"As the dealer gets into the food service field more deeply, and begins the layout of complete kitchens or serving areas, he will discover a need for some sort of metal fabrication facilities, but most food service dealers sub-contract this work, just as many food market dealers sub-let their woodworking for shelving and gondolas."

QUESTION: How about trade-ins in this field? Are they a problem? Is the sale of used equipment a factor?

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DAILY Direct Mail Gets DAILY Results

WHEN you are concentrating on the beverage cooler trade, you really have to go "all out" after leads—at least that is the thinking of the Kold Draft Toledo Co., Toledo, Ohio, This dealer has adopted a system that is getting daily results from using daily direct mail.

"The thing to keep in mind," says sales manager M. D. Irwin, "is that about 75% of all beer sold is now consumed in the home. So we are plugging the wall-type reach-in cooler for use by carry-out beverage stores and by taverns which cater to carry-out trade, as well as by those taverns which want to spotlight their refrigerated premium beers.

"For over three years we've concentrated on these reach-in cases by going after all accounts receiving new liquor licenses, as well as those who renew them. Each such firm is a good prospect, Irwin feels, for some new beverage equipment. And by prompt direct mail Kold Draft reaches them just at the right time.

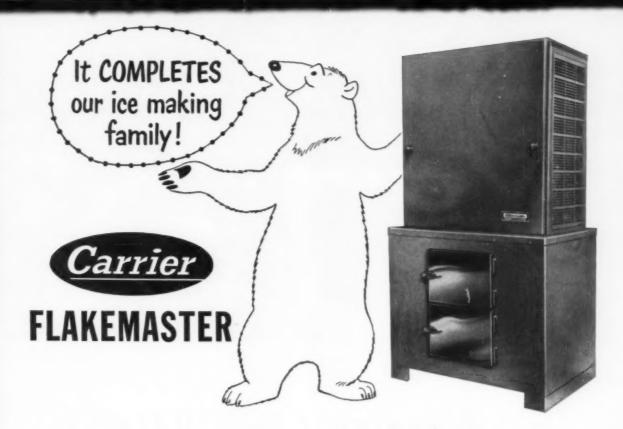
Over half of Kold Draft's volume has been built up around firm's sales of both the 45 and 70-cu. ft. Sherer-Gillett reach-in coolers. And the biggest percentage of these sales came from the direct mail leads.

In addition to the lists that are published daily on new liquor licences, Kold Draft gets quite a few leads from beer truck drivers with whom they've built up a personal friendship. These drivers are helpful in telling Kold Draft about firms that are going to remodel, enlarge their present facilities, or would be in the market for reach-in coolers and some of the other items that Kold Draft sells—automatic ice cube makers, freezers, draft beer coolers, and walk-in coolers.

Through personal contacts and friends, Kold Draft has built up a list of taverns with carry-out beer service. These firms are excellent prospects for the reach-in coolers, as they are able to sell more premium beers when the bottles are displayed so the customers can see them. Most of the taverns that bought reach-in coolers from Kold Draft reported their sales much Continued on page 109

PROMOTING PROSPECTS on a day-to-day basis, M. D. Irwin, sales manager of Kold Draft Toledo Co., checks the list (top) of new and transferred liquor licenses issued daily by the state liquor commission. His next step (bottom) is to promptly send a direct mail piece to each potential beverage cooler customer.





The Carrier FLAKEMASTER—the newest member of Carrier's ice-making family—even surpasses the cube-and-crushed models in ice-cost savings. Only 6¢ worth of water and electricity, at average rates, will produce 100 pounds of ice. Imagine how quickly a FLAKEMASTER pays for itself!

And just look at these other FLAKEMASTER sales features:

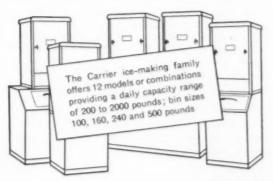
- · Hard, dry, easily handled flakes
- Simple, quiet operation with few moving parts
- Gravity delivery of ice into bin
- Automatic operation that keeps bin always full
- And many other features that add up to long years of efficient operation

Water-cooled models make 1000 or 2000 pounds of flakes per day. Air-cooled models make 1000 pounds per day.

The Carrier FLAKEMASTER is a dealer's sales-making delight. It adds to his list of prospects such quantity ice users as: supermarkets and fish, poultry and fresh-produce markets; fish, poultry and meat packing houses: dairies, restaurants, hospitals, hotels, bars, clubs and numerous other large-scale users of flaked ice.

Now—more reasons than ever before to be a Carrier ice machine dealer: choice of 12 models or combinations to assure matching every ice user's needs exactly, realistic pricing policy, liberal dealer and customer financing plans, and full coverage promotion help. They all combine to make big and continuing profits for the alert dealer.

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Planning Every Detail . .

... is of utmost importance when you tackle a job like remodeling the complete food service facilities of a large hospital. Here is an outstanding example of a dealer who did just that.

PLANNING and installing complete new food receiving, storage, preparation, and serving facilities for a large hospital is a big job in itself. But when all of this new layout has to be planned and installed around existing facilities, without interrupting food service at any time, the task becomes doubly difficult.

That was the problem which faced the Arthur F. Schultz Co., of Erie, Pa., when that firm tackled the job of providing complete new food handling facilities for Erie's St. Vincent's Hospital. Bus Blakeslee, manager of the Schultz engineering department, and Robert King of the firm's commercial food service division, were handed the assignment of figuring out how it could best be done. The result was an installation of which both the hospital and the dealer could well be proud.

The St. Vincent's installation, which was necessitated when the size of the hospital was substantially increased, was designed to satisfy these five major considerations:

- Provide adequate and modern facilities for the receiving, storing, and processing of foods and supplies.
- Provide for the smooth, functional flow of the raw food product to the cooked and ready-to-serve stage at the lowest possible cost.
- Assure good food served hot to patients and help alike through the use of modern and efficient equipment.
- Give maximum adherence to the sanitation standards established by the National Sanitation Foundation.
- Provide a cheerful atmosphere in a comfortable and attractively decorated dining room for hospital employees, in order to promote and maintain good employee morale.

To provide all this, a new service building was constructed adjacent to the hospital in which the receiving and storage facilities, as well as the new kitchen and a cafeteria, are housed. Connecting this unit to the old building would have presented little problem had it not been necessary to tear out and remodel sections of the old structure which were to have their place in the finished plan as part of the storage, processing, and food serving facilities.

Fortunately for Blakeslee, the Schultz organization was in "on the ground floor" on this job, so that the food service equipment and layout actually could be determined before the architect had completed the design of the building itself. This close cooperation between dealer and architect was a great help in such matters as planning compressor locations and determining the run of refrigerant and water lines.

A total of 22 items of refrigerated equipment were included in the final plan, only four of which were self-contained. The balance of the units were powered



STRIKING CONTRAST between the new and the old in institutional feeding facilities is graphically demonstrated in these two photographs. The photo immediately above shows the main kitchen area of St. Vincent's hospital in Erie, Pa., before the addition of a modern new food service annex. The new cooking area, planned for maximum efficiency and sanitation, is pictured on the facing page. Note the water cooler in right background and the cook's refrigerator next to it. Combination tile and stainless steel construction makes the area easy to clean. by remotely located compressors. This equipment was divided about equally between air-cooled and water-cooled units. Total price tag on the installation was approximately \$140,000.

"The importance of careful planning in handling institutional food service jobs such as this one cannot be overemphasized," Blakeslee declares. "And the dealer who wants to bid on this kind of business must be prepared and equipped to plan the complete job down to the smallest detail, whether or not it is even indirectly connected to the refrigerated phases of the installation."

Design of the St. Vincent's installation centered about the main kitchen, with its salad, vegetable and meat preparation centers, and a cafeteria for the service of food to hospital employees. Dining room facilities were provided as part of the cafeteria setup, with a separate dining area and service kitchen for the hospital administrative staff. A special diet kitchen flanks the main kitchen on one side, while a dishwashing room separates it from the cafeteria. A completely equipped bakery also is included.

A detailed breakdown of all the refrigeration equipment supplied for this installation is tabulated separately in this article.

All of the hospital's food preparation areas were located in relation to their respective refrigerators, to each other, to the main cooking area, and to the

Here's a breakdown of the refrigeration equipment involved in this installation:

EQUIPMENT	HP	LOCATION
75-cu. ft. cook's refrigerator	3/4	Main kitchen
Water cooler	1/4	Main kitchen
82-cu. ft. dough retarder	3/4	Bakery
Ice cream cabinet	1/3	Bakery
Ice cream machine	2	Bakery
70-sq. ft. meat walk-in	3/4	Meat prepara- tion area
43-cu. ft. reach-in	1/3	Salad prepara- tion area
72-cu. ft. reach-through	1/2	Solad prepara- tion area
112-sq. ft. vegetable walk-in	3/4	Vegetable preparation area
21-cu, ft. reach-in	1/4	Staff service kitchen
21-cu. ft. reach-in	1/4	Diet kitchen
72-cu. ft. reach-through	1/2	Cafeteria
10-cu. ft. reach-in	1/5	Cafeteria
Ice cream cabinet	1/4	Cafeteria
Cold pan	1/4	Cafeteria
Milk lowerator	1/4	Cafeteria
Water cooler	3/4	Dining room
Water cooler	3/4	Dining room
126-sq. ft. dairy walk-in	3/4	Receiving area
169-sq. ft. left-over walk-in	3/4	Receiving area
30 cu. ft. freezer	1/2	Dry storage
2000-lb. ice making machine	3	Ice making room



CAFETERIA SERVING COUNTER boasts such features as reach-through refrigerator, strategically located water cooler with glass filler, hot food and dessert section, tray lowerator.



DISHWASHING ROOM is located immediately adjacent the dining room, which can be seen beyond the pass-through window. Note soiled dish table and glass washing machine.

approved plan for serving, so as to facilitate the functional flow of food products.

Stub partitions, at a height to allow ease of supervision, segregated the preparation areas. Space has been allocated to permit proper sizing and spacing of equipment necessary to accomplish the job in each department. Work aisless are clearly defined to give proper working space and to prevent cross traffic.

Mechanical equipment has been placed conveniently to the points of most frequent use, and in relation to other departments, so that the use of this equipment can be applied as needed.

Portable stainless steel tables were designed and are in use to facilitate handling of foods and supplies from one department to another.

A water cooler is centrally located in the kitchen for the comfort and convenience of employees. Electrically heated food trucks, also fabricated of stainless steel, get the food to the patients while it is still hot. The food truck parking and pre-heating area is located separately from, but adjacent to the main kitchen, and in relation to preparation areas, so that truck routing follows a planned pattern of prepared-food pickup.

The kitchen is mechanically ventilated and cooking areas are exhausted by means of a high velocity blower. Grease is trapped to prevent accumulation in ducts, and as a safeguard against fire.

Properly engineered incandescent lighting is provided throughout.

Rigid sanitation standards were applied not only to the design and placement of equipment but also to the construction of the building itself.

Hand basins are conveniently located throughout



VEGETABLE PREPARATION SECTION contains slicer and stainless steel work tables. Note convenient location of hand basin and towel dispenser. Salad preparation section is in rear.



FOOD TRUCK PARKING is provided here. Electrical autlets in wall make possible pre-heating of carts, which are then moved to the main kitchen for food pick-up, and to the service kitchens.



BAKERY facilities include an 82-cu. ft. dough retarder (right background), three-deck electric oven, and steam heated tilting kettle. Tile walls and stainless steel fixtures aid cleaning.



MAIN KITCHEN contains coffee section with two 8-gallon combination urns from which aerovoid containers are filled and placed on hot food carts. Conveniently located salad section is shown in background. Note partial partition between.

the working areas, each with paper towel dispenser and receptacle for used toweling.

Enclosed base work tables, cabinet sections, and the cafeteria counter are all set on concrete filled quarry tile bases for ease of cleaning and mopping.

All equipment, including sinks, is kept 3" from the walls, with the range section 8" from its dividing wall. Work tables located along walls have 10" back splashes. Cabinet sections have 6" high back splash and fit tight against the wall. A stainless steel angle strip is secured to the top of the splash to seal the crack between it and the wall.

Cleaning facilities are provided in the hot food truck parking area so that trucks may be readily cleaned and sanitized after each serving period.

All walls and partitions are of ceramic tile con-Continued on page 78



COOKING AREA is the "heart" of the kitchen. This view shows kettle section, steamers, and facilities for washing and storing pots. Photo below shows (at right) ice cream freezer in bakery, and cabinets for both hardening and storage.



CORRIDOR between main kitchen and cafeteria provides ready access to walk-in coolers behind doors at right. Reach-through refrigerator (left background) enters into cafeteria.



Selling soft ice cream freezers can be an extremely profitable business, this refrigeration dealer has found, if you just . . .

Show Your Customers How To Make Money



TELLING THE PROFIT STORY with facts and figures, W. W. Sprout, a salesman for Johnson Refrigeration Co., first shows a prospect the three types of ice cream machines displayed on the firm's sales floor, and then confronts him with dollars-and-cents figures like those tabulated below, in order to highlight the operator's profit potential.

No. of gallons of mix sold per day	No, of gal, per yr. (312 days)	Profits per day	Profits per year
	MILK SHAKE	PROFIT STORY	
1	312	\$ 2.56	\$ 934,40
5	1,560	\$ 12.78	\$ 4,664.70
20	6,240	\$ 51.12	\$18,658.80
	FROZEN CUSTA	RD PROFIT STOR	Y
2	624	\$ 4.04	\$ 1,510.08
2	2,496	\$ 19.36	\$ 6,040.32
40	12,480	\$ 96.80	\$30,201.60
CON	VENTIONAL ICE	CREAM PROFIT	STORY
2	624	\$ 7.04	\$ 2,196.48
2 5	1,560	\$ 17.60	\$ 5,491.20
30	9.360	\$105.60	\$32,947.20

THERE are various methods of low pressure selling, but dealer Cliff Johnson of Johnson Refrigeration Co., Toledo, Ohio, believes that none is more effective than the one he uses-simply proving to the prospect that the equipment you have to offer will help him make money.

Johnson specializes in the sale of frozen custard machines. On the wall of his showroom hangs a sign that reads: "Make Money Wherever There Are People". This slogan aptly sums up Johnson's sales philosophy, for he makes a practice of showing his customers how to do just that.

When you sell soft ice cream freezers you have to begin on the prospect in the fall or winter, Johnson believes. And your actions should begin with showing the customer how he can make more money. By starting on a prospect early, you can get him into the program so he'll get his building built during the late winter, and be ready for business in May.

When Johnson or one of his salesmen calls on some prospect and he seems to be wavering, he'll let him go for the time being. Then he'll come back several weeks later when some of the facts pointed out on the previous visit have soaked in. On the second visit, Johnson gets the prospect to go with him to see another store that is already in operation, so the prospect can see for himself how the user is making money.

"There is plenty of opportunity for profit in selling frozen custards, soft ice cream, or milk shakes," W. W. Sprott, a Johnson salesman says. "But if we don't think the man will be able to make money when he opens his business, we refuse to sell the machine to him. In such cases, of course, we try to find a better location for him so he'll be able to get the right traffic and get the sales to make his business profitable.

Season Is Short

"One important thing about this type of business is that it has a relatively short season—from May to September—so an operator must have good traffic. Peak traffic usually comes on a week end, or late in the day when people go for a ride," Sprott continues.

"Most dairies sell the mix for making frozen custards, etc., at prices ranging from 96 cents to \$1.05 per gallon, depending on the butter fat content (in Michigan it is 12%, while Ohio has 6%)." Sprott adds. "A man can sell this mix when frozen at \$3.65 per gallon. The average store usually can sell about 100 gallons on a week end, if he has a pretty good location. And that is one of the most important things we do - make sure a dealer will be able to make money-for we don't want to sell a machine to him if he can't."

Users Are Used

Johnson Refrigeration carries a model of each of the three types of Mills machines on the display floor all the time. Generally, after the salesmen see a prospect in the field, they will bring him to the store so he can examine an all-purpose machine, frozen custard machine, or milk shake machine.

Experience has shown however, that the most effective selling story is not how the machine looks on the sales floor, but how it looks in some other restaurant or drive-in operation. These users can tell the prospect what they have learned from their own experience. There are over 20 outstanding firms in the Toledo area that John-

Continued on page 109



BEFORE AND AFTER views of the fire which helped a Niagara Falls, N.Y., dealer sell more ice cubers in a single week than he'd sold all the previous year.



Story of a "Fire Sale"

FIRE usually isn't considered to be any particular friend of the refrigeration man, but John A. McHugh of McHugh Refrigeration Co., Niagara Falls, N.Y., has reason to be grateful for a fire which say it may seem, this fire has helped him sell quite a number of automatic ice cubers!

Here's how it came about. McHugh hadn't been able to sell more than three ice cubers a year until last spring when one of his tavern customers was hit by a serious fire. This fire burned away the entire end of the bar adjacent to the ice cube machine, but the ice maker continued to operate and when the owner checked the damage the next morning he discovered to his amazement that not a single cube was melted. This despite the fact that the insulation on the electrical connection, the plastic strips around the door, and the gasket which seals the lid of the cuber all were burned away.

So delighted was the owner with this minor miracle that he bragged about it too all his friends and business acquaintances. The result? Leads from the owner brought 10 ice cuber sales to McHugh practically immediately, as many as four in a single week, and more than 20 sales altogether.

The damaged unit itself was sold to another tavern owner with only the notation that it had been used and reconditioned. Not knowing that it had been through a fire, this purchaser was so pleased with the unit's performance that three more new leads were received by McHugh as a result of this sale.

Changing Trends

in food service operations spell increased profits for refrigeration dealers . . .



SALES STIMULUS afforded by letting the customers see the variety of brands of beer and other beverages on hand has resulted in moving reach-in bottle coolers from under the bar to the back bar line-up, as shown in the photograph above.



POINT-OF-USE refrigeration is on the increase in the food service business, as indicated by this separate salad preparation center located adjacent to the restaurant's dining area.

R EFRIGERATION installations in restaurants have undergone quite a change in the last year or so, according to Associated Designers of Cleveland, Ohio, a firm which specializes in the layout of food and beverage service establishments. And many of these changes pave the way for the sale of more items of refrigerated equipment.

One of the most important of these changes, from the standpoint of the commercial refrigeration dealer and distributor, is the increase in "point of use" refrigeration which has been brought about by the realization that such facilities will not only keep food longer, but also keep it looking better in salads and other prepared dishes.

In restaurants doing a large volume of business the use of walk-in coolers is being replaced by the installation of several reach-in coolers placed at different



TIME SAVED by the convenience of this reach-in refrigerator located immediately behind the cooking area of this restaurant means increased profits and more satisfied employees.

points in the restaurant so that they will be more accessible to the cooks or other food handlers. Henry Weiss and W. D. Howard, of Associated Designers, have capitalized on this particular trend in many restaurants because it adds up to more efficiency and a better reputation with the "eating trade". There are a number of advantages supporting the use of multiple reach-in coolers. They are:

(1) An operation is more flexible. The owner can do more business, and it will be a better business. The food is more accessible and the owner can handle more food with less manpower and loss of time.

(2) It lessens the steps of the waitresses, and other help.

(3) There is a saving in money because there is less spoilage of vegetables and other foods.

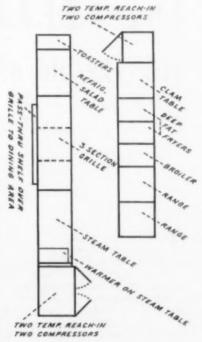
(4) Space is one of the biggest advantages. This is a very important item to a restaurant owner. There is a decided asset to having more space for the serving of customers, but it also is valuable to have more space in the kitchen so it can be devoted to necessary equipment. Many of the firms that do a large volume of business can still have a walk-in cooler in the basement, but reach ins are used in the kitchen or where the food for salads or vegetable servings will stay nice and fresh until needed.

(5) And one of the important uses of reach-ins is with beverages. Instead of buying large cans of milk or having the half-pint containers stored in a large cooler in the basement, it is easier for the waitress or a man who carries them up to have the beverages stored in a convenient cooler near the serving area. If someone had to go to the larger cooler, it would take a lot of extra time, and increase the firm's overhead. And because so many restaurants use the small individual containers, it is important that they be stored near the point of usage.

Restaurants which offer a food carry-out operation in addition to their table service, frequently have a refrigerated case in the lobby or the front of the establishment so customers can pickup either frozen meals or other frozen food items. The Stouffer Restaurant Corp. in Cleveland now has frozen entrees, soups, various meals or main dishes, and desserts that customers can take home. It wasn't too many years

Continued on page 63





TYPICAL RESULTS of scientific food service planning are evident in the compact and efficient restaurant kitchen area pictured and diagrammed here. Any refrigeration dealer selling to the food service field can well profit by ideas such as these.

EDITOR'S NOTE: Because the proper application of flow control devices is one of the most important considerations in the successful operation of refrigerating equipment, we are proud to present this comprehensive discussion by John Schenk, whose experience and position in the industry make him well qualified to present this material in such a way as to make it of practical value to anyone concerned with the design or installation of refrigeration systems. This article will be published in six parts. Part one, presented here, covers the basic principles of heat balance in the refrigeration system, and the application of constant pressure expansion valves and thermostatic expansion valves. Subsequent sections will deal with flooded evaporators, high and low pressure float valves, float switches, electronic liquid level controls, suction line regulators, evaporator and suction pressure regulators, and solenoid valves for various applications.

BALANCING THE REFRIGERATION SYSTEM with the aid of proper flow control devices

by John A. Schenk, director of engineering, Alco Valve Co.

PART ONE

HEAT balance in the refrigeration system exists when the heat flow to the evaporator equals the net capacity of the compressor to pump this same amount of heat to the condenser, where it is rejected together with the heat of compression. The refrigerant flowing in the system acts as the vehicle to carry the heat from the evaporator through the compressor to the condenser. By increasing or decreasing the refrigerant flow rate, the capacity of the refrigeration system can be increased or decreased.

"Balancing the refrigeration system" may be defined as the regulation of one or more of the system's components to establish equilibrium between heat flow to the evaporator and heat rejection from the condenser, after the latter figure is corrected by deducting for the heat of compression. This balance or equilibrium may be accomplished in many ways by effecting a change in one or more of the following: (1) com-

pressor capacity; (2) rate of refrigerant flow; (3) rate of heat absorption by the evaporator; (4) rate of heat rejection by the condenser.

Controls and refrigerant flow control valves play an important part in balancing the refrigeration system. Therefore, the selection of the proper refrigerant flow control valves and the correct application of these devices is vitally important in guaranteeing satisfactory performance of the refrigeration system.

Let us first consider the compressor and the various ways in which it may be arranged in the system. Compare in each case the ability of the compressor capacity to balance with the load or the desired rate of heat flow to the evaporator.

One compressor without means of capacity reduction other than the on-off method of operation.
 (In this case, when the compressor operation is continuous the only reduction in capacity avail

able is that which results from a reduction in suction pressure.)

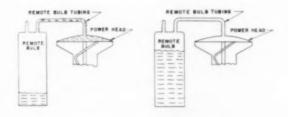
- One compressor with by-pass from discharge to suction. (Approximately 50% capacity reduction possible.)
- One compressor with two-speed motor control. (Approximately 50% capacity reduction possible.)
- Two or more compressors, not including methods two and three. (System compressor capacity can be reduced in direct proportion to the number of compressors used.)
- One or more compressors with cylinder unloading. (Most flexible system of compressor capacity of all the methods mentioned above.)

The first method offers very little flexibility in compressor capacity, and therefore in such a system most of the burden of balancing the system capacity to the load must be borne by the controls and the refrigerant flow control valves. The second and third methods, permit the compressor capacity to balance more closely with the load. The third and fourth methods offer the best arrangement of balancing the compressor capacity to the load.

It can readily be seen that the choice of refrigerant flow control valves for each different systems should be carefully considered, and selections made only after the engineer fully understands what is expected of the system. Application of these control valves is also of great importance, and the success or failure of these valves to balance the system depends largely on their being applied correctly. Now let us consider the operation of the various types of control valves and how they may be used to best advantage in achieving system balace.

CONSTANT PRESSURE (AUTOMATIC) EXPANSION VALVES

In general, the constant pressure expansion valve, when applied as a liquid refrigerant expansion valve, is suitable only on constant load applications and therefore its use is limited. When used on a variable load application, this valve will starve the evaporator



VOLUME OF LIQUID CHARGE EXCEEDS COMBINED VOLUME OF POWER HEAD AND REMOTE BULB TUBING, THERE IS ALWAYS SOME LIQUID IN THE REMOTE BULB

FIG. 1-Liquid charged thermo expansion valve.

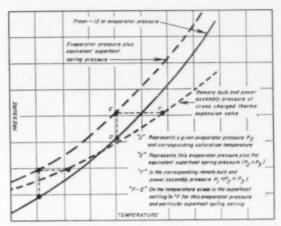


FIG. 2-Cross charge temperature-pressure relationship.

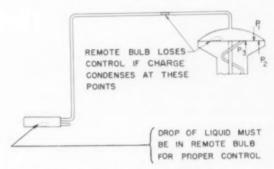


FIG. 3—Gas charged thermo expansion valve.

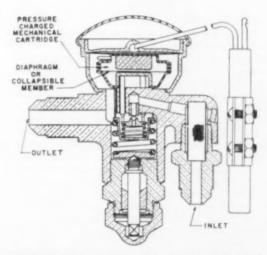


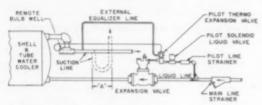
FIG. 4—Thermo expansion valve with mechanical type of pressure limiting.

at high load and overfeed the evaporator at low load.

There are, however, other applications of this valve that are of interest. It may be used as a pilot valve for large suction pressure regulators or as a hot gas by-pass valve in the refrigeration system. The latter application may result from the need for a reduction in compressor capacity or for maintaining a minimum suction pressure to prevent blocking of a forced air evaporator with frost or ice.

THERMOSTATIC EXPANSION VALVES

The thermostatic expansion valve is the most versatile, popular and economic type of liquid refrigerant expansion valve. It is a precision device which regulates the rate of liquid refrigerant flow to the evapo-



NOTE WHEN SUCTION LINE RISES DIMENSION "A" SHOULD BE AS SHORT AS POSSIBLE

FIG. 5—Pilot operated thermo expansion valve on shell and tube water cooler with refrigerant in the tubes.

rator in exact perportion to the rate of evaporation of the liquid refrigerant in the evaporator. It is operated by: (1) the evaporator pressure; (2) the remote bulb pressure, created by the superheat of the refrigerant gas leaving the evaporator; (3) the superheat spring.

Charges and Limiting Pressure Features

Liquid and liquid cross charged thermostatic expansion valves may be installed in any position or location, regardless of whether the valve body temperature is warmer or colder than the temperature of the remote bulb (see Figure 1). The liquid charge, consisting of the same refrigerant as is used in the system, provides essentially a constant superheat over a considerable range of evaporator temperatures.

The liquid cross charge is designed for greater power to deliver rated valve capacity at operating conditions and to minimize "hunting" throughout its range (See Figure 2). This charge is primarily designed for low temperature application. The inherent high superheat characteristic during pull-down prevents "flood back" on start-up and motor overload. This high superheat is reduced to a practical operating value as the evaporator temperature is lowered to the desired operating range. Valves with this type of charge should be set for optimum superheat at the lowest evaporator temperature expected, in order to avoid "floor back".

A gas charged thermostatic expansion valve can provide compressor motor overload protection on some systems because of its limiting effect on the maximum operating suction pressure. It also prevents "flood back" on start-up. Increasing the superheat setting will lower the maximum operating pressure (MOP), and decreasing the superheat setting will increase the maximum operating pressure, because the superheat spring, together with the evaporator pressure, acts directly on the remote bulb pressure through the power element diaphragm.

Since a gas charged thermostatic expansion valve contains liquid in the remote bulb up to the MOP point, it is important that this liquid remain in the remote bulb as shown in Figure 3. The valve must be placed in a location that will allow the power head and remote bulb tubing to be warmer than the remote bulb. This will prevent condensation of the charge in the power head or remote bulb tubing, which would otherwise make the valve inoperative.

Gas charged thermostatic expansion valves, while not limited in their application, perform to best advantage on water chillers and air conditioning units with evaporator temperature range between 30 and 50 F. Thermostatic expansion valve charges should be selected in accordance with the valve manufacturer's recommendations for best performance.

Thermostatic expansion valves with the mechanical pressure limiting feature use a liquid or liquid cross charged remote bulb. Typical valve construction is shown in Figure 4. The main advantage of the mechanical pressure limiting type valve is that installation in any position or location is permitted, since the remote bulb is liquid or liquid cross charged and will not lose control as is possible with the gas charged type. The MOP of the thermostatic expansion valve, illustrated in Figure 4, remains unchanged when an adjustment is made in the superheat setting, because the pressure cartridge in this construction is unaffected by the superheat spring pressure.

Large capacity thermostatic expansion valves are usually built on the pilot operated principle. It is

Continued on page 76

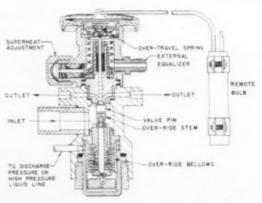


FIG. 6—Multi-outlet thermo expansion valve with discharge pressure over-ride modulating feature.



COPPER REFRIGERATION TUBE

When you flare DRYSEAL for compression fittings you'll save your temper and your time. It's because of the special temper and ductility. Bending dead-soft DRYSEAL is equally easy . . . do it by hand . . . no tools of any kind are needed. And when you get your DRYSEAL take a squint at those double-crimped ends. This is the final step in manufacturing, that immediately follows a special cleaning and dehydrating operation, which keeps dirt and moisture from entering the tube.

The seal is made in such a way that it does not change the diameter of the tube. This makes it possible to pass the tube through any opening large enough for the tube itself. Economical tube sizes range from 1/4" to 3/4" O. D.

In addition the DRYSEAL carton, has been attractively designed for easy identification in stock. It contains one 50-foot coil of DRYSEAL... is easier to handle, light weight, economical and is sturdily made to assure protection of the tube.



REVERE

COPPER AND BRASS INCORPORATED
Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

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COMMERCIAL REFRIGERATOR

"Complete Job Approach" Cited As Dealer's Guide to Success

A condensation of an address presented by R. J. Wischusen, executive vice president of Engineering & Refrigeration, Inc., Jersey City, N. J., and immediate past president of NCRSA, at the 8th annual convention of the National Commercial Refrigerator Sales Association.

THE complete job approach is the commercial refrigerator distributor's most reliable stepping stone to success under today's competitive marketing conditions.

To be completely successful the modern distributor must combine the facilities and know-how of layout experts, merchandisers, color specialists, insurance advisers, financiers, refrigeration engineers, electricians, and plumbers. I sincerely believe that a distributor's objective can only be achieved if he offers all of the following facilities: (1) complete drafting service; (2) sound financial handling: (3) installation and service by his own department; and (4) last, but most important, a well trained and supervised group of salesmen armed with facts.

When a supermarket operator decides on a complete alteration or a new outlet, it requires many months of planning and estimating. Certainly if we as distributors are allowed to plan all phases of such new or remodeled markets we should be in a position to sell the entire job on a competitive basis.

This complete job approach is also the distributor's most effective answer to the problem of direct selling by manufacturers. If we conscientiously follow this approach there isn't a manufacturer that can compete with us, because after all the cards have been turned face up and the chips counted, the price preferential which the manufacturer can offer is outweighed by the complete job assistance which the distributor can provide.

With an organization fully equipped to do a complete food market job, the distributor can look for and receive the full cooperation of a manufacturer. Just remember that the manufacturer's



product is simply a combination of steel, glass, and copper all rolled into a workable piece of merchandising equipment. We build the story around it, show our potential customers how this piece of equipment can bring them additional profit from the floor space which it occupies, and convince them of the merchandising job it can do in their stores.

If we live up to our responsibilities as distributors, we will gain the respect of every supermarket operator in our individual territories. This is the approach which every distributor should use, and when all necessary departments are efficiently manned to provide the complete job we will then be in a position to reach our objective and automatically eliminate the direct sale that causes so much consternation in our industry.

Today, in almost all complete market planning, air conditioning is a "must", together with its working companion, either an evaporative condenser or water tower. This is in addition to the complete store layout, including back room working arrangement and the prepack room with its many necessary appliances.

This planning is an extensive job because every step we take must be based on sound facts and considered from every angle. Whenever possible, in new store planning, a complete drawing should be presented in advance so that when the architect's plans are formulated the entire store operation will be based upon the plans which we have submitted.

If you are not already doing this type of complete job, I suggest that you seriously consider whatever action may be necessary to place you in this position. Analyze your organization and then make any alterations or additions that may be required to put your firm into a position to handle the overall job on an efficient basis, and at the same time keep your prices on a competitive level.

11 NEW NCRSA MEMBERS

Nine new distributor members and two new manufacturer members have joined the ranks of the National Commercial Refrigerator Sales Association in recent weeks.

New distributor members are: Bond Equipment Co., Columbia, S.C.; George Hillis Refrigeration, Inc., Klamath Falls, Ore.; G. W. Jernigan Store Fixtures & Supplies, Little Rock, Ark.; MacLennan Co., Sacramento, Calif.; Mounts Market Equipment Co., Washington, Pa.; H. M. Price Equipment Co., Montgomery, Ala.; H. G. Schiller & Co., Dorchester, Mass.; Udell Refrigeration Co., Grand Rapids, Mich.; United Improvement Co., Neptune, N. J.

New manufacturer members are Barr Mfg. Co. and Typhoon Air Conditioning Co., Inc.



Your Scotsman Ice Machine FRANCHISE ///////

There are plenty of reasons why dealers are nailing down territory after territory but basically they all boil down to one, plain, honest fact—A SCOTSMAN FRANCHISE IS THE MOST VALULABE AUTOMATIC ICE MACHINE FRANCHISE.

Here are facts about a Scotsman franchise that will make you say, "that's the kind of franchise I want." Write, wire or phone and nail down a Scotsman Franchise as fast as possible. Several profitable franchise territories still open. Act now!

FACTS LIKE THESE MAKE A SCOTSMAN FRANCHISE MORE VALUABLE

- Scotsman offers America's only complete line of automatic ice machines.
- Extra long profit margins give you more profit on every sale.
- Scotsman territories are protected territories.
- No "post-sale" service headaches to rob you of your profit.
- Lower installation costs make more sales, give more profit.
- Powerful merchandising helps are always building sales for you.
- Heavy advertising at the consumer level pre-sells Scotsman for you.

SCOTSMAN DEALERS ARE SUCCESSFUL DEALERS—BE SURE YOU ARE ONE OF THEM! WRITE—WIRE—PHONE FOR COMPLETE FACTS

AMERICAN GAS MACHINE CO.

Division of Queen Stove Works, Inc. Dept. CRA-25 Albert Lea, Minnesota



Please send me the facts and tell me how to "nail down" a Scotsman franchise.

Super Cubers

Produce 100 to 500 pounds daily.

Name

Super Flakers

Produce 350 to

1050 pounds

daily

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City State



QUALITY COOLERS YOU CAN FIT INTO YOUR LINE AND SELL AT A PROFIT

ACCESSORIES



You sell quality, trouble-free cooling in these efectric units that operate wet or dry. In 3 sizes . . . 4, 5, 6 ft. Unobstructed interiors. Baked Enamel finish for beauty and sanitation.

SEND FOR CATALOG C-WI

The BEVCO Company, Inc.

HOLD MEETING SERIES ON STORE PLANNING

Fogel Refrigerator Co. and Proctor & Schwartz, manufacturers of the new all-metal adjustable shelving are holding a series of regional educational fixture-distributor forums. The purposes of these clinic meetings is to exchange ideas and hold open discussions on all the "physical factors" of store planning, layout and merchandising.

Principal speakers at these meetings are Joe Finnerty, sales manager of Proctor "W/M" Shelving Div., and Saul Goldberg, storeplanning and merchandising department of Fogel.

JOHNS ASSOCIATES EXPANDS TERRITORY

Johns Sales Associates, Newark, N.J., have been appointed representatives in New York City for the Commercial Div. of Jordon Refrigerator Co. The new territory is in addition to North Jersey and the entire state of New York. Tom and Harold Binder, father and son, are the principals in Johns Sales.

NEW TYLER "GUIDE" EASES ESTIMATING

A new pocket-size, slide-ruletype "Balanced Systems Guide," designed to streamline the work normally involved in figuring a commercial refrigeration job, is now available from Tyler Refrigeration Corp.

The device gives such data as BTU requirements, line and condensing unit sizes and other data necessary when installing Tyler equipment immediately upon lining up figures in the proper "windows".

Given the various case models and lengths, the guide can be used to determine proper condensing unit size, case capacity requirements and electrical requirements, on the face side. On the reverse side, given the condensing unit model, suction line sizes and length of runs are fed back to the user, along with the various BTU capacities.

The new guides are available at 25¢ each, direct from Tyler.

BUY FROM YOUR REFRIGERATION WHOLESALER

You've Lead the Sales Parade

WITH THESE TWO NEW DISPLAY CASES . . . BY



See your Federal Distributor, or write for bulletins on these two new Distributors. After the Complete Line of Refriserators and Freezers for Food Stores, Hotels Institutions, Hospitals—wherever food is used or sold.

NEW FEDERAL "FREEZ-MART" SPOT MERCHANDISER COMPLETELY SELF-CONTAINED

Here's modern streamlined beauty that attracts instant attention. Provides full $13\frac{1}{2}$ cubic feet capacity for frozen foods or ice cream — with easy-load, easy-reach convenience. Includes self-contained 1 H. P. F22 refrigeration unit with famous Federal Automatic Self-Defrosting System, and all necessary controls, as well as Anti-Frosting feature that prevents condensation and frost accumulation. Available also with lighted superstructure for allied non-refrigerated products display.

NEW FEDERAL SELF-CONTAINED SELF-SERVICE DAIRY CASE

A brand new idea in self-service cases. Federal Self-Contained Model 3205 SC makes an exciting and effective spot merchandiser for supermarkets or a fast

sales builder for superettes. Truly modern in design, in white baked enamel, stainless steel trim, with embossed aluminum shelves, it offers 13,9 sq. ft. of refrigerated display area, plus 2.55 sq. ft. of non-refrigerated shelf display, Uses famous "Cascading Cold" and requires no drain.



FEDERAL REFRIGERATOR MFG. CO.

510 Elizabeth St., Waukesha, Wis. * Factories: Waukesha and Belleville, Wis. PIONEERS AND LEADERS IN FOOD REFRIGERATION SINCE 1918.

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FEBRUARY, 1955 . COMMERCIAL REFRIGERATION

every inch hot-dip galvanized steel

for longer life and top performance

The unsurpassed durability and maintenance-free life of Acme Cooling Towers results from the strict attention to detail long associated with Acme production and engineering. First, Acme Cooling Towers are constructed of heavy-gauge steels for maximum, rigid strength. Then after the unit is completely fabricated, the tough weather-resistant hot-dip galvanized finish is bonded to enable the unit to withstand the most severe weather conditions.

This permanent bond of zinc actually adds to the metal thickness and structural strength of this Acme all-steel unit. There is not a particle of wood in the unit to rot. There are no painted surfaces to rust away or require repainting. There is only this durable, all-steel, permanently protected unit to give you more years of peak per-

formance.

COOLING TOWERS

Add to the rugged durability of Acme Cooling Towers all these extras and you understand why they are first in their field. Exterior-mounted, over-size ball bearings; integrally-mounted, custom designed pump; external sump — easily accessible for servicing; conveniently located water treatment basket; removal sediment screen; an automatic waste, drain and overflow; quietrunning, constant velocity blowers; weather protected blower motor; non-clogging low-pressure nozzles; adaptable for front, top, or rear discharge; large convenient access doors; wetted metal deck principle - fastest heat transfer.

Capacities range from 15 to 70 tons. Smaller capacities are available in the equally rugged and efficient Acme Flow-Cold Cooling Towers, 2 to 15 tons.

ACME INDUSTRIES, INC

JACKSON, MICHIGAN

Manufacturers of Quality Air Conditioning and Refrigeration Equipment since 1919

Cooling Towers - 2 to 70 tens

Ble-Cold Unit Coolers Dry-Ex (direct Expansion, Flow-Therm packaged Liquid Liquid Chillers

Evaporative Condensers Shell-and-Tube, Shell-and- Heat Exchangers Coil Condensers

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Chillers to 220 tons

Liquid Receivers Flow-Temp Heat

Pumps Remote Room Conditioners Oil Separators

save water with Acree

Acme Catalog on large capacity cooling towers

Acme Catalog on Flow-Cold cooling towers Acme Catalog on Evaporative Condensers

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THE COMMERCIAL REFRIGERATION and AIR CONDITIONING

APPLICATIONS MANUAL

by Hugo C. Smith

R eaders are invited to submit their problems to this department. Each letter of inquiry will be answered personally by the author. All problems should be clearly and completely stated and addressed to: COMMERCIAL REFRIGERATION AND AIR CONDITIONING. Manual Dept., 1240 Ontario St., Cleveland 13, Ohlo.

How To Lick Moisture Penetration Through Walls of Low Temperature Storage Space

WITHIN the last three years the frozen food business has experienced a phenomenal growth. To keep abreast of this growth, the commercial and private storage facilities of this nation have been hard pressed. In many cities freezer storage facilities have been expanded 200 to 300%. Commercial storage facilities built originally for 35 F work have, in many instances, been converted to 0 or -5 usage simply by adding additional insulation to the structure and increasing the compressor and evaporator sizes to make them adequate for the new type of service.

In some cases this has resulted in serious problems due to the fact that cold storages 30 or 40 or more years old were usually insulated with cork installed in cement, without any provision for vapor sealing on the outside wall. If adapted to low-temperature use, these installations are subject to moisture damage with possible freezing and cracking of walls.

According to a manual published by Armstrong Cork Co., zero degree rooms that are not properly vapor sealed are subject to moisture penetration by three forces: wind pressure, vapor pressure and stack effect.

In the case of wind pressure, this manual states that a 30 mph wind will drive moisture-bearing air through a 13" brick wall at the rate of 21 cu. ft. per hr. for every sq. ft. of surface. Assuming outside temperature at 80 F with relative humidity of 70%, 200 sq. ft. of wall surface will pass 3/4 gal. of water per hr. or 18 gal. every 24 hrs.

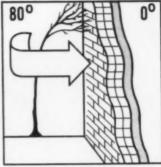
Vapor pressure is perhaps the least understood of these three forces. It is a fact, however, that moisture in a vapor state will travel rapidly through many substances, providing a low vapor pressure (dry cool air) exists on one side of the wall and a high vapor pressure (moist warm air) on the other side.

Such a condition exists within the average freezer, particularly with today's automatic defrost equipment. Moisture is constantly being removed and carried out of the room by the heated drain during every defrost operation. This creates an extremely low vapor pressure inside the room, while the outside of the room may be constantly bombarded with extremely high vapor pressures, depending on outside temperatures and humidities.

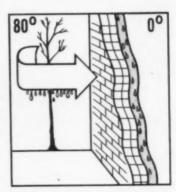
Without proper vapor sealing, this vapor will travel through the wall of the cooler and into the insulation until it approaches the cold area on the inside of the room. Somewhere within the insulation the dew point is reached and this vapor is actually condensed into physical water within the insulation itself. This, in turn,

decreases the insulating effect of the insulation, allowing the moisture to drop below the freezing point. Shortly thereafter, the freezer wall develops a bulge and will rapidly destroy itself.

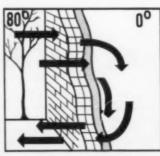
The forces exerted by stack effect would be minor compared to the first two forces mentioned. It is possible, however, to obtain stack effect in reverse in a cooler having porous walls. The zero degree air tends to drop to the floor of the cooler, creating a partial vacuum at the top of the room. This, in turn, will pull warm air through the top section of a porous wall and the heavy cold air will be



WIND PRESSURE



VAPOR PRESSURE AND DEW POINT



STACK EFFECT





Non-Waxing — Foam - Resistant —

unexcelled for all low-temperature applications.



Specified: by nearly all original equipment manufacturers.



Your Wholesaler Has It!

Distributed nationally by Virginia Smelting Company, Dept. 64, West Norfolk, Virginia.



ESOTOO . KINETIC CHEMICAL'S "FREON" REFRIGERANTS V.METH-L . CAN O GAS . PERMAGUM . PRESSTITE TAPE SUNISD REFRIGERATION OILS

DOES IT AGAIN!

LINE-TAP VALVE

Small, compact hermetic valve that Is easily installed on the lines of systems, piero ing the tube without charging refriger ant, to provide a port



ing or testing. Conforms to tube, eliminating top heavy assembly . . will not loosen or develop leaks due to vibration . . will not bend or crimp tubing. Use with

Watsco Control Valve, Part No. CV-1.
Part No. LT-4 for 1/4" Tubing
Part No. LT-5 for 5/16" Tubing
Part No. LT-6 for 3/8" Tubing
Part No. LT-6 for 1/2" Tubing

LINE-PORT VALVE with T-S CONNECTION



U. S. Pat. Pane Provides a port for sealed units when it is desirable to cut the line that is to be tapped. No top heavy assembly to vibrate loose. The addition of

the T-S Connection permits a huge variety of installaor both ends either flared or soldered. Use with Watsco Control Valve, Part No. CV-1.

Part No. LP-4 for 3/16" sweat; 1/4" sweat; 1/4" flare. Part No. LP-6 for 1/4" sweat; 5/16" sweat; 3/8" sweat;

CAN-TAP VALVE

Screws on to Charg-A-Can refrigerant disposable con tainers. Valve stem needle ierces the can seal and operates as a regular valve atlowing removal of refrigerant. Easily shut off and sealed. No protruding parts when in closed position. Use with Watsco Control Valve, Part No. Part No. CT-1



CONTROL VALVE

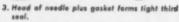


Designed expressly for use with LINE-TAP VALVE, LINE-PORT VALVE and CAN-TAP VALVE. Plated tool key with a screw arrangement that easily opens or closes these valves. Quick coupled - installed without wrenches. To operate screw Control Valve on to any of the three valves and turn to open; then close, unscrew Control Valve

and remove. Use over and over again, one tool for hun Part No. CV-1

4 POINT SEALING PREVENTS LEAKS

- 1. Needle pierces line and seals.
- 2. Toper of needle plus gasket forms second (and



4. Knurled brass cap plus gasket is positive fourth seal.

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forced out through the bottom portion of the wall.

There are several substances in common use which are positive vapor barriers, such as a perfectly applied asphalt coating on a smooth wall, or aluminum foil with joints properly sealed. Regular 15 and 30 lb. common building felts are not vapor barriers unless a heavy asphalt coating is mopped on top of them. None of the waterproof cements can be considered as a vapor barrier. Sisalcraft paper, which is a paper reinforced with sisal fibres and to which is bonded either an aluminum, copper or lead foil, is an excellent vapor barrier when joints are properly sealed.

Most refrigeration service men have encountered the strange phenomenon of moisture developing in a system that has had a slow leak, although the system remained constantly under pressure. Moisture may enter the system in this manner when the internal pressure of the system (psi) becomes lower than the vapor pressure differential existing between the inside of the system (which would be at an extremely low vapor pressure) and the surrounding air on the outside (which on a warm moist day would be at an extremely high vapor pressure).

Under these conditions, the moisture travels through the leak into the refrigeration system against low internal system pressures. Not understanding this process, service men frequently blame such moisture troubles on the refrigerant manufacturers, claiming that the moisture was in the gas

that was added.

Care also should be exercised to prevent heavage of freezer room floors which are placed on the ground. If the area of the freezer floor is greater than 20 x 20' it is necessary to provide some means of heating the ground under the freezer. Otherwise, this ground will slowly freeze, resulting in heavage of the floor and building foundations. This heavage may be prevented by placing 6" drain tiles on 6' centers directly under the subfloor and venting these tiles to the outside. Or, some of the hot gas could be by-passed from the compressors to a pipe grid laid on top of the ground under the subfloor.

Just as important, and occurring nonetheless frequently, is insulation failure directly traceable to man-made damage. If through bolts are used for coil hangers, care should be taken to properly insulate them where they protrude to the outside.

A mound of brine putty at least 4" thick or an 8" square of 4" thick cork insulation should be used at this point, otherwise the head of the bolt will build frost continuously. The balled frost will then attract moisture from the surrounding air, which will condense and run down on the ceiling of the freezer finding its way through the ceiling insulation. This will continue until the insulation becomes water logged, eventually freezing and expanding to a point where it destroys itself.

This same situation will occur when the ceiling insulation is pierced by metal electrical conduit. If it is impossible to enter the cooler from the side with electrical conduit, the metal conduit should be insulated for a distance of 3 to 4',

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or until all condensation disappears.

Best insulation at this point would be brine thickness cork covering with all joints perfectly sealed with asphalt mastic compound.

The proper manner to enter a freezer with electrical conduit is on the side wall of the freezer level with the inner ceiling. All conduit is then run exposed. A seal-off plug is used to prevent moisture condensing inside the conduit itself and running out of the switch boxes, etc.

The alert refrigeration contractor should advise his customer on these various points. The customer will usually hold the refrigeration contractor morally responsible for cooler and freezer damage, even though other trades performed the work.

PERFECTION DRIVES FOR BUILDINGS' BUSINESS

Perfection Stove Co. has announced a new air conditioner program tailored to benefit the nation's building managers.

As part of its program, Perfection will merchandise its air conditioners on a five-year cost amortization plan. The company also plans to lease air conditioners on a five-year basis or longer.

On the extended sales and rental plans, complete cost of wiring made necessary by installation of the air conditioning equipment will be financed by Perfection. The company will also provide five years of free service and parts to those taking advantage of the extended programs.

In line with its expanded air conditioner operations, Perfection has opened new air conditioner headquarters in New York City, in the 270 Park Ave. Building. The new headquarters will include display and demonstration area. Murray Albaum has been appointed to head the metropolitan New York commercial air conditioner sales area. He formerly was sales manager for the New York distributors of Fedders and Mitchell air conditioners.

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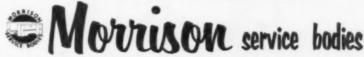
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- 22. Reinforced tailgate.
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24. Side boxes supported by one-piece cross members, reinforced at mounting holes.

28. Beaded fender panels hinged for easy access to wheels and spring shackles.

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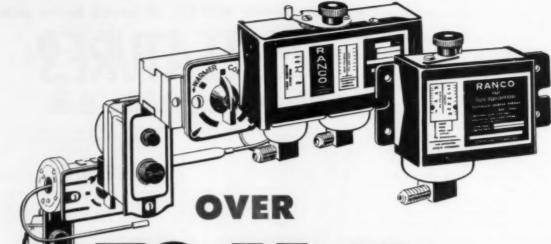
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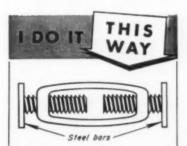
HERE'S HOW!

Serviceman Explains Re-Sealing of Hermetics

Several months ago (June, 1954) we published in these columns a description of two pieces of shop equipment developed by M. P. Schlosser of Byram, Conn., for opening sealed units and removing the casting from the shell. Schlosser now reports that as a result of this publicity he has received numerous inquiries as to his method of resealing these units after servicing them. Here is his reply:

"In re-sealing the units I use an oxy-acetylene torch with a No. 11 All-State low temperature welding rod. Where the copper tube comes out of the shell I use a silver

solder."



HERE is a trick I use to help make belts tight on close-coupled commercial refrigeration condensing units. I take standard turnbuckles of various sizes, cut off the hooks or eyes, and weld I x 3 x 1/4" steel bars to the end of each screw.

In actual operation, I first loosen up the motor bolts. Next I select a turnbuckle of suitable size, insert it between the motor and compressor, and turn it either by hand or with the aid of a screwdriver until the motor is pushed far enough away from the compressor to tighten the belt to the proper tension. Then I tighten the motor bolts and remove the turnbuckle.

George R. Hendrickson North Arlington, N. J.



WANT TO EARN \$5?

You don't have to be a literary genius to pick up a fast five-spot. All you have to do is jot down some of the shortcuts you've developed in your maintenance or installation work and send them to Here's How Editor, Commercial Refrigeration and Air Conditioning. If the Editor votes "yes" on your contribution, your \$5 will be paid promptly when your maintenance tip is published in the magazine. Let's hear from you!

Do You Use Decals?

Every time you make your first service call on any customer do you apply to his equipment a decal or some other means of identification giving your name and phone number?

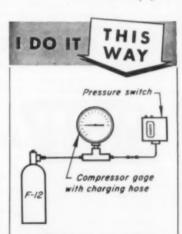
If you do, congratulations on being an alert merchandiser of your services. If you don't, better stop to think about what a good bet for more business you're missing.

Actually, this seems so fundamental that it probably sounds foolish to mention it, but you'd be surprised how many refrigeration and air conditioning installations we see in the course of a year which bear no visible evidence whatsoever of a service contact. Don't forget — if your customer has to rely on the telephone directory to find out how to call you, there's always the chance he might pick somebody else's number!

FOUNTAIN FREEZER SERVICE Low Voltage

It has been found that undersize wire leads to the machine, and insufficient or excessive voltage supplied by the power company, are the major causes of electrical component failures.

While all components are fully reliable to function on a variation Continued on page 60



WHEN installing a new low pressure switch or changing the setting of one previously installed when the refrigerator is cold, therefore causing a long wait for the pressure to build up, 1 do it this way.

Disconnect the flare fitting from the compressor body in the usual manner (in the case of an old control), then disconnect the electrical connection to the refrigerator. Next, connect a Freen drum to the pressure switch with a gauge in the line, and then you can set the switch by increasing or decreasing the pressure at will. Finally, reverse the above procedure.

A very eccurate setting can be obtained by using this procedure, and a lot of time can be saved in the process.

> W. L. Soileau Lafayette, La.



Circle No. 40 on Reader Service Card NEW SPRING RETURN

Control Motor

- Compact, modern design developed specifically for damper operation. Mounts anywhere, in any position.
- Instant acting—on fan applications, has damper open before fan reaches top speed.
- Two-position opens domper wide, or closes it tight.
- · Integral Spring built-in. Cannot slip or unwind when installing or servicing.
- · Oil-submerged mechanism housed in die-cast case for lifetime lubrication, minimum maintenance, utmost reliability, safe heat dissipation.



- Full 180° travel-with highest torque at ends of stroke.
- · Friction clutch absorbs shocks. prevents damage to gears.

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NEW BULLETIN, F-6800, now available. Consult nearby Field Office, or write us.

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. Rockford, Illinois, U. S. A.

of plus or minus 10% on the input voltage, greater variations are often found at the machine itself, which will cause contact points to burn, relays to stick or fail to make contact, and motor and solenoid coils to overheat, which in turn will cause thermotectors to repeatedly break the circuit. All of this causes great inconvenience to the operator.

The serviceman should always first make sure that this is not the cause of difficulty, and should request a continuous recorded voltage check to be made at the machine itself. The power company is usually willing to provide a recording voltmeter so that this check can be made.

It is important to have the record over at least two full days or a weekend through the rush period when trouble appears. The serviceman is often called upon to check the machines during the quiet hours of the day when power lines are not used as extensively, so that this cause of trouble is difficult to isolate and correct unless a corrected voltage check is available.

Why Guess?

... when you can be sure with

The Industry-accepted indicator

for all refrigeration purposes.

LIQUID EYE "100" in 1/4" and 3/4" flare and O.D.S. sizes in the 100 Series.

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in 1/2" and 1/4" flare and O.D.S. sizes in the 200 Series.

LIQUID EYE MEANS: perfect refriger-ant visibility * strate-thru flow * leak-proof— high safety factor * spring loaded gastets * standard wrench flats * instant analysis of refrigerant condition.

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The original replacement unitsperformance-proved in many thousands of installations during almost a quarter century.



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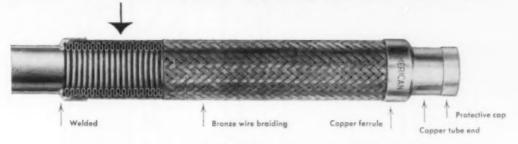
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Circle No. 42 on Reader Service Card FEBRUARY, 1955 . COMMERCIAL REFRIGERATION

Circle No. 41 on Reader Service Card

American Vibration Eliminators made from PHOSPHOR BRONZE seamless tube



No laps or joints where leaks can occur. American VE's reduce number of callbacks, assure customer satisfaction.

American Vibration Eliminators have a seamless phosphor bronze core. This means there are no laps or joints where leaks can occur. High grade phosphor bronze (98.75% copper, 1.25% tin) makes this core highly resistant to fatigue. Bronze wire woven over the flexible core and brazed into integrated end fittings gives added strength and durability.

Because freedom from leaks in refrigerant lines is so important, we test each Eliminator with nitrogen gas under both pressure and liquid before it leaves the factory. Then we dry the Eliminator in a special oven. Ends are sealed to keep the unit clean and dry.

Your Anaconda wholesaler stocks American Vibration Eliminators in standard copper tube sizes. For descriptive bulletin VE-310R write: The American Brass Company, American Metal Hose Branch, Waterbury 20, Conn. In Canada: The Canadian Fairbanks-Morse Co., Ltd.

for American Vibration Eliminators see your

ANACONDA*

29 American VE's installed in air conditioning system of new Potter Aeronautical Company Plant, Union, N. J.



INSTALLATION MADE BY Contractor Fred Wendel, Paramus, N. J. Eliminators range in size from 1" to 3½". Here, Leon Dern connects one of 29 American Vibration Eliminators used to dampen vibration and deaden noise in rigid piping.

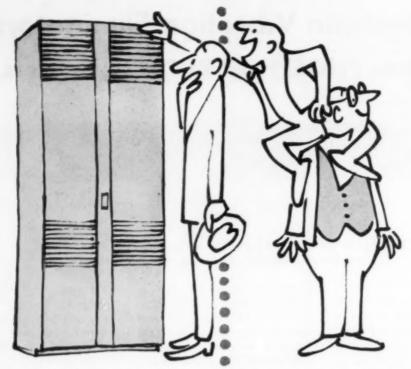


NO CHANCE OF cracked piping here. American VE's are flexible. They cut maintenance costs in pipe lines of refrigeration and air conditioning units. And they are leakproof... prevent loss of refrigerant, in this case Freon 12.





AIR CONDITIONING UNITS suspended from ceilings to create more floor space typify ultra-modern design of Potter Aeronautical Company's new plant. This company is one of the country's leading manufacturers of aircraft flowmeter systems.



It's great to be a Carrier Weathermaker* Dealer!

Because Carrier Distributors are extra helpful!

When a Carrier Dealer reaches a new high in salesmanship, there's a good chance that a Carrier Distributor put him up to it. Carrier Distributors are like that-all 108 of them! They believe in building a dealer up. So you think you don't know anything about commercial air conditioning? Your Carrier Distributor can put you through the most comprehensive business development course ever devised for self-contained dealers.

Carrier Distributors know air conditioning!

They've grown up in the air conditioning business. Many of them

started as dealers themselves. They're specialists in air conditioning and in all that goes with itengineering, application, sales, service, advertising. Moreover ...

You have the Carrier name to sell!

Carrier stands for air conditioning -not automobiles, not light bulbs, not kitchen appliances. Carrier people pioneered air conditioning and know it best! And Carrier offers you the most complete line of self-contained units in the business-including the new 1955 Carrier Weathermakers that need no water! + Reg. U.S. Pat. Off.

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- 1. Complete Course in "How to Sell the Weathermaker"-covering estimating, design, application, installation, sales, the works!
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CHANGING TRENDS . . .

Continued from page 45

ago that some restaurants used to display meats in the front area so customers could select their own steaks or chops for the chef to cook to suit their taste. In fact, some firms still use this as a drawing card.

"The carry-out refrigerated case is especially important to the driveins," Howard points out. "Driveins are becoming more popular on
the fringe of a city, and many restaurants to get their share of the
business are using this same
"carry-out" merchandising gimmick if they are located on the outskirts of a large city."

Point-of-Use Grows

The mixing of salads has become more common in the dining area, because the psychological effect of the customer's food being mixed right in front of him means plus business. Thus, a refrigerated case must be located at this point of operation so that the food will be accessible and will be nice and fresh when it is used.

"It is up to the refrigeration dealer to point out these things to a restaurant owner when he is outlining the sale," Howard points out, "He must show him that the restaurant will make more money if he uses these types of installations.

The restaurant owner is the best judge of what type of business he intends to have, but it is up to the refrigeration dealer to show him that there are new products, new methods, new services that will help him make more money.

Profits Make Sales

"Money talks," Howard continues, "and if a dealer will use that as the wedge with a new restaurant as well as with an existing operation (and, frankly, that is one of the most important reasons for remodeling or putting in any new equipment) he'll make a sale."

In the restaurant-bar combination and drive-in restaurant there has been a definite trend toward putting the beverage dispenser in a remote location. In laying out new operations of this type or redesigning old ones, the design firm tries to put as much of the equipment as possible under the counter where it will be out of the way. Most restaurants want the counter-area to be neat, clean and more modern. Only the faucets show above the counter, and many times even these are dropped under or behind it if at all possible.

In restaurants where there is a central kitchen, the ice cube machine is used. In some small restaurants, they use chilled water for the customers. "Really, cubes are better than chilled water," Howard points out. "It isn't so much that it might make the water cool for a longer time, it is the point that you are doing a better selling job and you are performing a service. There is a definite eye appeal that ice creates in water, and it doesn't even matter if the water may be

"Now as soon as you get inside begin complaining about how warm it is!"

made colder by chilling. When you use ice it shows that you are taking an interest in your customer, so you are doing a bigger selling job.

One of the recent changes with restaurants is the use of soft ice cream because of employee relations. Howard cites the example of a woman bending over the counter grabbing a scoop, and scraping the final dab of ice cream from the bottom of the can. Service from a soft ice cream machine is much quicker and easier. The ice cream cabinet can be replaced with other equipment now because the popularity of soft ice cream has reached the restaurant, where it is used on pies, and is also used to supply ice cream for bulk sales. The milk shake machine has become very popular along with it.

In just one year's time, Howard figures conservatively that a 25% change has taken place in the ice cream field. Restaurant owners know that frozen custard stands have become more popular, but they don't make changes just because something is popular in one season. They must figure on a vear-round basis.

Display Cases Used

The open display case found in grocery stores has made the grade with the kitchen cook. Many "fry cooks" have had a refrigerated case near the grill but it has been either to the right or the left and as a cook stepped that way he lost valuable time. Now Associated Designers puts an open refrigerated case directly behind the cook so he can just reach behind him and grab the hamburger or filets and not waste steps or time.

One of the important changes that has come in another phase of the food and beverage handling business—cocktail bars—is the reach-in refrigerator for the backbar and beverage box. The refrigerated case with a special formica top is especially useful for the small bar or for the man with a limited budget.

"There are many small bars that are trying to cash in on the extra profits of the food handling or serving business and we have put these cases in such establishments primarily for that reason," Howard points out. "But this same equipment can be used for more bottle storage in addition to the front or regular bar."

Hot Wire Helps

Aside from the installations described above, Howard and Weiss have gone back to the hot-wire method of keeping a freezer door free of condensation. If a freezer is located in a spot with poor ventilation, the hot wire around the door minimizes the condensation problem.

Refrigeration men have considered restaurants hard prospects to sell, and they are. But to sell any restaurant, you must show them the savings they can make in their operation. In accordance with this theory, Howard has come up with many design changes in the last year or so for refrigeration installation in food handling to make it more efficient and economical.





Frequent door openings in this house-to-house delivery truck of Enterprise Ice Cream Company of Phoenix, Arizona, pose no problem, because 3 Kold-Hold Hold Over plates keep ice cream at proper temperature. A 3/4 horse-power mounted compressor forms the highside unit. Body by Aluminum Body Corporation of Vernon, California.

Kold-Hold Hold-Over plates hold temperatures in the ice cream and milk compartments of this wholesale delivery! truck built by Williamsen Body Works for Hi-Land Milk. The Hold-Over plates maintain proper temperatures in each compartment during the daily run. Two compressors are plugged in atnight to recharge plates.

NOW! truck refrigeration that's tailored to your needs

Need "over-the-road" refrigeration? Kold-Trux Mobilmatic is your answer. Prefer make-and-break assemblies for recharging? Kold-Hold has them. Want a mounted compressor? You can get it from Kold-Hold. Have to hold low temperatures in your trucks despite scores of door openings daily? Kold-Hold Hold-Over plates are unexcelled for just that job. Need a combination of some of these systems, or would you be better served by Thin plates, Serpentine Quick-Action plates or Hydro-Pack Blowers? Kold-Hold Division of Tranter Manufacturing, inc., can give you any and all of these units in just the right combination to meet your individual requirements. Don't hogtie your overall operating efficiency by using an inflexible refrigeration system. Rely on Kold-Hold's know how and experience (the originators and oldest manufacturers of mechanical truck refrigeration) to tailor your truck refrigeration to your needs.

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KOLD-HOLD

for the latest developments in truck refrigeration

Meat is kept in prime condition by Kold-Hold refrigeration units in Colesio's Farm-City trucks with bodies built by Aluminum Body Corporation of Vernon, California. Despite door openings, meat suffers no loss of bloom and requires no trimming for spoilage after delivery.

Combination of Kold-Trux Mobilmatic retrigeration and Kold-Hold Mold-Over plates is employed by St. Louis Dairy of St. Louis, Missouri, in several of its large wholesale milk trucks. While in motion, the truck generates retrigeration as needed through its Kold-Trux Mobilmatic system and the Hold-Over plates maintain the required temperatures the rest of the time.







For the answer to your truck refrigeration problem write for "8 Ways to Refrigerate A Truck." Ask for Bulletin No. ET-453.



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TRANTER MANUFACTURING, inc.

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LANSING 4, MICHIGAN

Circle No. 46 on Reader Service Card
FEBRUARY, 1955 • COMMERCIAL REFRIGERATION

The Who, What and Why of Dover Cooling Towers







In 1946, Dover Manufacturing Company began manufacturing packaged steel cooling towers for commercial and industrial

use. Today, in a modern, fully equipped plant, Dover has facilities for the fabrication of all types of steel. Demand for Dover towers has increased over the years to such an extent that the company now operates with more than 25,000 square feet of plant and office space. Modernization and expansion of plant and production facilities has been only one part of the Dover plan. To this has been added the latest methods and techniques in the design, engineering and construction of cooling towers.

WHAT?

Dover offers, for the first time at no extra cost, a cooling tower that is hot-dip galvanized after fabrication. Dover, and only

Dover, provides this outstanding rust-preventing feature in packaged cooling towers at the same price as ordinary painted towers. This feature is not an "extra," but is standard finish on all Dover Series "CF" towers. Hot-dip galvanizing puts an end to troublesome, costly rust problems. The Series "CF" packaged steel, induced draft, propeller-type cooling towers provide trouble-free performance for indoor and outdoor water cooling where capacity is from 2 to 100 tons. These towers are ideally suited for air conditioning and refrigeration installations as well as for jacket water or air compressor cooling. Other Dover towers include the Series "SR" Natural Draft Redwood towers for capacities of from 3 to 108 tons.

You get low-cost cooling efficiency because Dover towers minimize operating and maintenance costs. Neat, modern

design is an integral part of the rugged construction. What's more, you get guaranteed delivery of rated thermal capacity. All Dover tower models have been pre-tested under actual operating conditions in a modern testing lab. In this complete testing laboratory at the Dover plant, towers are tested for various decking arrangements, air delivery, and the economy and practicability of fabrication. Every condition under which the towers are tested is completely and automatically controlled for precise measurement.

DOVER COOLING TOWERS AVAILABLE FOR IMMEDIATE DELIVERY

Stocks of Dover packaged steel cooling towers are maintained in four parts of the country, providing fast delivery to all locations.

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- Please have a Dover representative call on me.

Address

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To solve a problem, first get to the center of it; and that's just what the engineers of Celanese and Delta Engineering did at the Celanese Corp. of America's Summit, N. J. research lab.

The nub of the problem called for controlled temperatures to be made available throughout the building for research and pilot plant work. The solution centers on a p-k brine storage chiller centrally installed in the basement. Around it is the system of the closed-circuit type, composed of compressor, pumps, brine make-up and mixing tanks, with all instruments and controls mounted in a centrally located control panel.

Elimination of the conventional, open roof tanks means a clean system, while careful integration of units ensures ease of maintenance. This compact p-k chiller installation, requiring only minimum insulation and floor space, is lactory assembled in the 780 gal. brine storage tank. From here, brine is circulated throughout the building at -15°F. to -10°F, with Freon 22 used as the cooling medium.

We believe that you, like the Delta Engineering and Conditioning Co., will find it easy and profitable to work with p-k specialists in the design, manufacture and application of heat transfer equipment. Write for information.



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101 Park Avenue, New York 17 . Railway Exchange Building, Chicago 4 . 1700 Walnut Street, Philodolphia 3 . 96-A Huntington Avenue, Buston 16 . and other principal cities.



ALL PURPOSE END SUCTION PUMP

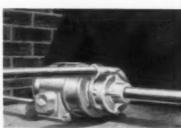
is more popular every day

AND WHY THE

PEERLESS

Fluidyne LINE
IS ONE OF AMERICA'S

MOST POPULAR BRANDS



PEERLESS PUMP DIVISION FOOD MACHINERY AND CHEMICAL CORPORATION

Factories: Los Angeles, Calif., and Indianapolis, Indiana Offices: New York; Atlanta; Chicago; St. Louis; Phoenix; Fresno; Los Angeles; Dollas, Plainview and Lubbock, Texas; Albuquerque, New Mexico.

Distributors in Principal Cities; Consult your Telephone Directory.

ALL PURPOSE

Peerless Fluidyne pumps can be used for almost every general purpose pumping condition where *quality with economy* is a condition of pump application.

COMPACT

Space costs money; Fluidyne pumps fit neatly into both piping and pumping layouts as well as into sub-assemblies.

EASY TO MAINTAIN

No special tools are required to perform ordinary pump maintenance in the Peerless line.

ATTENTION-FREE

Ample safety factors assure performance on continuous or intermittent duty, regardless of mounting angle.

QUALITY FIRST

Every consideration has been given in design and construction to assure long service life even under abnormal conditions. Designed with economy in first cost, installation, maintenance and operation – all without compromise in quality.

HUNDREDS OF SIZES

The Peerless Fluidyne line is one of the broadest offered by any manufacturer. Drives: electric, belt or flexible coupled; HP range: from ½ to 150 hp; Capacities: up to 5500 gpm; Heads: up to 260 ft.

QUICK AVAILABILITY

Peerless stocks its Fluidyne line at branch offices geographically located at major population centers. This stocking plus Indianapolis, Indiana and Los Angeles plants makes possible quick shipments of anything from a pump to a truckload.

NEW STYLING

Pleasing, trim and compact, their sturdy exterior design makes for neat installations.

OUTDOORS-INDOORS

Indoors or out, every general utility pumping service can use Peerless Fluidyne Pumps. In all sizes, types and models the Fluidyne line is characterized by high performance ratings.



MAIL COUPON TODAY

PEERLESS PUMP DIVISION

Food Machinery and Chemical Corporation 301 West Avenue 26, Los Angeles 31, California

Please send without obligation new Bulletin B-2300 describing Fluidyne line of fractional and integral hp pumps.

....

COMPANY

CITY STATE

CR&AC

Circle No. 49 on Reader Service Card

READING

"ZEKTROSEAL"
COPPER REFRIGERATION
TUBE

FIRST STEP in a Quality Installation—

Soft temper for easier forming . . . dehydrated — with crimped ends to seal out all moisture and dirt . . . and keep the inside surface absolutely clean. Comes in handy 50-foot coil packed in its own convenient protective carton, clearly labeled for easy identification. To be sure of the job — be sure to specify Reading.



READING COPPER - BRASS TUBE

READING TUBE CORPORATION

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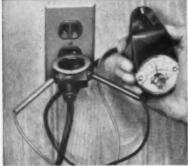
Check appliance current at receptacle



Trouble-shoot relays quickly



Instantly determine hot leg of receptacle



Check appliance voltage at receptacle



Instantly determine if fuses are good



Know if the load is balanced



Know if windings are grounded



Check capacity of motor capacitors



Expand low-amp reading by doubling lead

Eliminate Guesswork!

One pocket tester measures voltage and current, with instrument accuracy, without shutting down equipment!

And the cost is only \$19.85 (just a few dollars more than an ordinary voltage tester), so every man can carry one!

Pick the Amprobe Junior that fits the job. 7 models from 0-10 amps to 0-100 amps; choice of either 0-125/250 volts A-C or 0-150/600 volts A-C range. For your higher current applications, multi-range Amprobes available for 300, 600 or 1200 amperes.

See the full Amprobe line of snap-around volt-ammeters at your jobber's today.

Send for valuable Amprobe service bulletins showing many more ways to save time and money on the job with an Amprobe. Mail coupon now to: PYRAMID INSTRUMENT CORP., LYNBROOK, N. Y. (Export Div.: 458 Broadway, N. Y. 14), world's largest manufacturers of snap-around volt-ammeters.

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Circle No. 51 on Reader Service Card

Send for these free Amprobe service bulletins

Pyramid Instrument Corp.,

Dept. CRA-25, Lynbrook, N. Y. Please send me the Amprobe service

- bulletins checked below:
- UL wiring standards, room conditioners
 Trouble-shooting electric motors
 How to cut costs and land more jobs
- Portable test instruments

COMPANY

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ZONE___STATE_

COMPARE

SERVEL SUPERMETIC

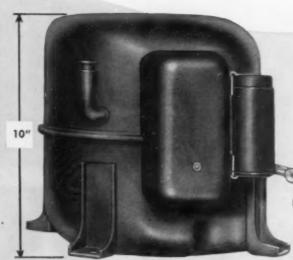
TOP-RATED FEATURES THAT HELP YOU INCREASE SALES ...

Low current inrush, high power factor motors Refrigerant and oil-spray cooled

Models for F-12 and F-22 applications

Fully enclosed against moisture, dust and loss of refrigerant

Forced-feed lubrication . no manual oiling



Compact, low height, space-saving design

Oil-free refrigerant . . . no oil-slugging

> Sizes to fit any type and style fixture

High temperature models for air-conditioning, water cooling, bulk milk and beverage cooling

COMPACT % H.P. AIR CONDITIONING POWER UNIT

SUPERMETIC

HERMETIC POWER UNITS

. . . each a sales winner in its smooth, carefree, cost-saving way . . . are available for High, Medium or Low-Temperature Applications — for either expansion valve systems (1/4 H. P. to 7 1/2 H. P. Models) or for capillary tube type systems (1/4, 1/3, 1/2, 3/4 and 1 H. P. Models.)

- . . . and you'll see why Servel gives you
- * BETTER PERFORMANCE
- * GREATER ECONOMY
- * MORE DEPENDABILITY

Where else can you find such a combination of tried and proved advantages? Each is in itself a highly desirable feature. Call on Servel NOW for applications assistance in planning your refrigeration requirements. There's a factory representative in your area. Wire, write or phone us today.

SERVEL, INC., Commercial Refrigeration Division, Evansville 20. Indiana

THE NAME TO WATCH FOR GREAT ADVANCES IN REFRIGERATION AND AIR CONDITIONING





FROM 2 TONS

400 CFM TO 26,000 CFM IN BOTH VERTICAL AND HORIZONTAL CABINETS

COMPLETE FLEXIBILITY FOR YOU

Choose exactly what you want with Governair Air Handling Units. Secure more closely controlled balance of system load by simple selection of air handling component. 24 complete and individual sizes for greater flexibility.

OPTIONAL GOVERNAIR FEATURES:

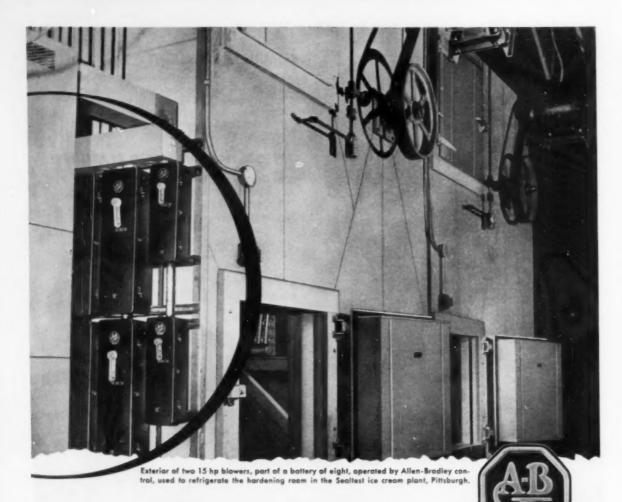
- Heavy-duty die formed face and by-pass dampers
- Generously sized permanent and replaceable filter sections
- Mixing boxes
- Spray and pan type humidifiers

Manufacturers of Multi-zoned Air Handling Units, Packaged Air Conditioners, Evaporative Condensers, Cooling Towers, Blast Coils, and many others. Write for complete information and specifications.

GOVERNAIR

GOVERNAIR CORPORATION • 513 N. Blackwelder Oklahoma City, Okla.





ALLEN-BRADLEY **COMBINATION STARTERS** operate blowers in ice cream plant!

Simplicity of design is the top requirement of a dependable motor starter. The simple solenoid action of Allen-Bradley automatic starters . . . enclosed arc hood . . . maintenance free, double break, silver alloy contacts . . . reliable solder pot overload relays . . . white cabinet interior . . . bonderized cabinet finish are outstanding features that you secure at no added cost when you buy Allen-Bradley solenoid starters.

Over the years, A-B starters have rendered such continuously reliable service to the air conditioning and refrigeration industry that they have become "an accepted standard."

Allen-Bradley Co., 1340 S. Second St., Milwaukee 4, Wis. In Canada: Allen-Bradley Conada Limited, Galt, Ont.

Why are Allen-Bradley Automatic Starters so Popular for Refrigeration and Air-Conditioning Service?



Only ONE moving part . . . the



secret of trouble free operation.

There are no pivots, pins, hinges, or friction parts to cause trouble.



The double break, silver allay contacts never need cleaning or filing — a timesover and money saver for you.

reliable everl relays



Provide continuously reliable protection to man, motor, and machine . . . your guarantee of trouble free operation.

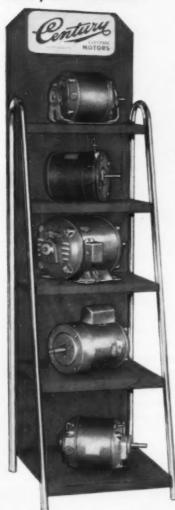
ALLEN-BRADLEY QUALITY MOTOR CONTROLS

Now from Century

TWO EASY WAYS TO GET YOUR SHARE OF PROFITABLE MOTOR REPLACEMENT BUSINESS

SELL MOTORS ON SIGHT WITH THIS

Century Silent Salesman



Take advantage of the BIG, constantly growing demand for replacement motors with these and other motors from the Century Line.

MAINTAIN YOUR OWN MODEST STOCK OF Century MOTORS FOR RESALE

- Most often, when folks need a replacement motor, they need it QUICK. You can fill that need—and gain their loyalty—by selling them top quality motors from Century's Complete Line.
- A stock of Century Motors prepares you for profitable replacement business with most makes of compressors, oil burners, blowers, unit heaters, pumps, fans, appliances, and scores of other motor-driven products.
- Free, with your order for only ten Century Motors, you get the
 attractive red and chrome metal display stand shown here. It
 identifies you as the man to see for replacement motors. You'll
 show more motors, sell more motors with this display, in just a few
 square feet of space. Limit of one display stand per customer.

WORK CLOSELY WITH YOUR COOPERATIVE Century SERVICE STATION

- Century's network of service stations is nation-wide. There's one in your vicinity—ready to give you delivery on practically any Century Motor your customers might need.
- Every Century Service Station is staffed by men whose skill you can
 use to solve your motor service problems...men who can help you
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CENTURY ELECTRIC COMPANY St. Louis 3, Missouri

Offices and Stock Points in Principal Cities

GET ALL THE DETAILS of the CENTURY Motor Selling Plan

... MAIL THIS COUPON TODAY!



837

CENTURY ELECTRIC COMPANY

1806 Pine Street, St. Louis 3, Missouri

I want all the facts about Century's motor replacement selling plan.

Name

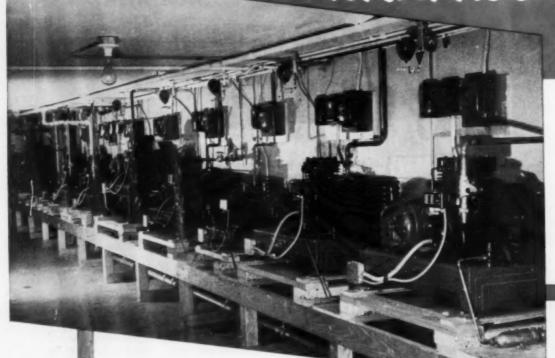
Company

Address

City. Sans State

Photo courtery Curtis Refrigerating Machine Division

GET THE OIL THAT'S WAXFREE



WSE Texaco Capella Oil (Waxfree). The word WAXFREE is right on the container. It is your assurance of an oil that won't precipitate wax in systems — not even when temperatures go as low as minus 100° F. You can count on clean operation, high efficiency, low maintenance costs.

Texaco Capella Oil (Waxfree) has outstandingly low haze and floc temperatures, is tops in purity, stability and oxidationresistance. It does not foam, is moisturefree and compatible with all refrigerants. There is a complete line of Texaco Capella Oils (Waxfree) to meet the requirements of all compressors and operating conditions. In 55-gallon and 5-gallon drums, 1-gallon cans, and the more widely used grades in 1-quart containers — all refinery-sealed to protect purity and quality.

Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



TEXACO Capella Oils (Waxfree)

FOR ALL REFRIGERATING AND AIR CONDITIONING COMPRESSORS

TUNE IN: TEXACO STAR THEATER starring JIMMY DURANTE or DONALD O'CONNOR, on TV Sat. nights. METROPOLITAN OPERA radio broadcasts Sat. afternoons,

Circle No. 57 on Reader Service Card

FEBRUARY, 1955 . COMMERCIAL REFRIGERATION

CONTRACTORS

NEWS • ACTIVITIES • PLANS

New City Regulation In Denver Booms All Water-Saving Devices

A decision by the Denver (Colo.) board of water commissioners, which specifies that every user of air conditioning or refrigeration equipment of more than 2 tons capacity must install water conserving equipment by June 1, 1955, has developed feverish activity among Denver refrigeration equipment contractors.

Faced with the most serious drouth in the state's history, Denver's water board is convinced that upwards of 15,000 acre feet of water per year can be saved, through forcing the installation of cooling towers, spray and evaporative condensers, and spray ponds on all refrigeration equipment.

The drastic decision came only after the state's water storage level sank to an all-time low, according to E. I. Mosley, water board superintendent. Affected will be factories, office buildings, such entertainment centers as theaters, night clubs, taverns and lounges, retail stores, and others, down to the 2-ton refrigeration minimum.

Few refrigeration users will escape altogether, it was indicated, inasmuch as after the "big systems" are properly equipped, those users of air conditioning who maintain units of 2 tons or less will also be required to add watersaving devices. This may bring air-conditioned residences into the picture as well.

As defined by the water board, a conservation device is one to reclaim for re-use at least 90% of the water used for cooling, heating, or manufacturing purpose, and which will enable the water so reclaimed to be re-used and further reclaimed.

VIRGINIA GROUP TO HOLD TRADE SHOW

A state-wide Refrigeration and Air Conditioning Trade Show is being planned in connection with the meetings March 11-13 of the Refrigeration & Air Conditioning Contractors Association of Virginia and the state association of the Refrigeration Service Engineers Society, in the Hotel Jefferson in Richmond.

Trade show hours, it is reported, have been arranged to coincide with the convention program. They are: March 11, 4 to 8 P.M.; March 12, 11 A.M. to 6 P.M.; and March 13, 12:30 P.M. to 4 P.M.

Exhibitors signed up at last report included Frank Howell Co.; Owens-Corning Fiberglas Corp.; A. R. Tiller Corp.; Shultz & James, Inc.; Catlett-Johnson Corp.; A. Lynn Thomas Co., Inc.; Hungerford, Inc.; Ralph Berry Co.; Hajoca Corp.; Gunlach & Co., Inc.; and Refrigeration Supply Co.

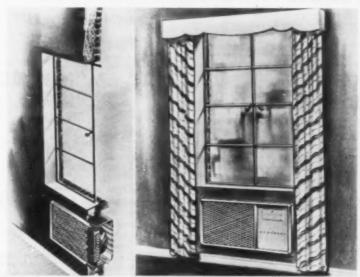
Patricia K. Cooley is manager of the trade show, with headquarters at 5 South 12th St., Richmond.

McGRAW ELECTRIC CO. BUYS COOLERATOR

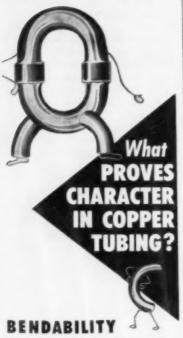
McGraw Electric Co. has purchased the business, excluding real estate, of the Coolerator Div. of International Telephone & Telegraph Corp. Coolerator, acquired by IT&T in 1951 from Gibson Refrigerator Co., manufactures refrigerators and window air conditioners at two plants in Duluth, Minn.

The sale involved only the current inventory and appliances, all machinery and fixtures, the Coolerator name and an option to buy the two plants.

BUILT-IN AIR CONDITIONERS FOR NEW CONSTRUCTION



BUILT INTO THE WALL is this new type of room air conditioning unit developed by Tywel Corp., Brooklyn, N.Y. Designed for installation during original construction, just like a radiator, the new unit will be manufactured exclusively for builders of apartment houses, motels, and private homes. Measuring approximately 18 x 30", and about as deep as the thickness of a building wall, the units will be produced in various capacities.



Temper plays a key role in the bendability of copper tubing. United Copper Tubing gives you the uniform grain structure and controlled temper which are ideally suited for bending.

EXPANSION FACTORS

When specifications call for mechanical or hydraulic expansions, the tube that makes the requirement without failure has the type of built in character you can depend on!

It is in extreme use that really good copper tubing identifies itself and copper tubing character is firmly established in United Copper Tubing.

UNITED COPPER TUBING HAS THESE MAJOR CHARACTER ASSETS AT THE START

Completely Uniform Temper Sparkling Cleanliness Inside and Out Tolerances Precisely as Called For (down to the closest!)

UNITED

COPPER TUBING HAS THE DEPEND-ABLE "USE" CHARACTERISTICS YOU WANT IN YOUR COPPER TUBING

AND SUPPLY CORP. PERMANENTLY PROVIDENCE, 1 1.

Circle No. 58 on Reader Service Card

BALANCING . . .

Continued from page 48

customary to use a small thermostatic expansion valve to pilot a large piston type spring loaded expansion regulator. The small thermostatic expansion valve supplies pressure to or bleeds pressure from one side of the regulator piston containing a small bleed hole. The unbalanced force thus created is used to position the regulator valve and modulate the liquid refrigerant flow to the evaporator.

Figure 5 shows such a control valve application on a shell-and-tube water cooler with refrigerant flowing inside of the tubes (direct expansion cooler). In the example shown, pressure is supplied by the pilot thermostatic expansion valve to the top of the regulator piston, moving the regulator valve in an opening direction. By installing a pilot solenoid liquid valve ahead of the pilot thermostatic expansion valve, the regulator also serves as

a liquid stop valve when the pilot solenoid liquid valve is closed.

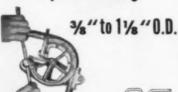
Figure 6 shows a multi-outlet thermostatic expansion valve with integral discharge pressure override modulating feature. When the compressor discharge pressure is below the predetermined control point, the charge pressure between the two bellows acts to pull the over-ride stem away from the valve pin, and the thermostatic expansion valve functions normally. As the compressor discharge pressure rises and approaches the control point, it over-comes the bellows pressure and pushes the valve pin in a closing direction by action through the over-ride stem.

The refrigerant flow through the thermostatic expansion valve can be modulated between maximum capacity and zero action of the over-ride unit, in response to discharge pressure, to prevent compressor motor overload as the result of high discharge pressure.

BUY FROM YOUR REFRIGERATION WHOLESALER

Handy Tube Bender

Smoothly Bends ANY Pipe or Tubing



Just a twist of the wrist assures perfect, even bends
 . . right-angle, any angle.
U and offset—every time.
Eliminate need for els. No

more guesses — no kinks! Save enough time, labor and money on ONE Job to pay for your Handy Bender.

See your supply house—or write for free folder today.

HOLSCLAW BROS., INC.

Circle No. 59 on Reader Service Card

PRODUCTS

BEVERAGE (OOLERS

BEVERAGE (OOLERS

UNEXCEILED STORM

(S66 cases 12 az. 8 ft. cooler))

INSTANTANEOUS

DIRECT DRAW

DIRECT DRAW

DIRECT DRAW

OF THE SEER (OOLERS)

(with refrigerated faucets)

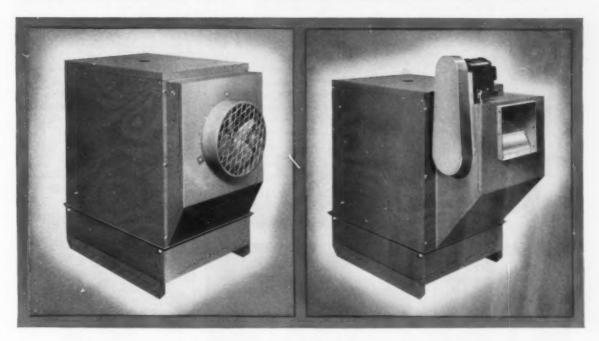
IDEAL

COOLER CORPORATION

2933 Easten Ave. St. Louis 6, Mo.

ice Card Circle No. 60 on Reader Service Card FEBRUARY, 1955 • COMMERCIAL REFRIGERATION

SMASHING SUCCESS STORY



LARKIN WATER-SAVER COOLING TOWER IS GOING GREAT GUNS ALL OVER NATION

Not since Larkin introduced its now famous Frost-o-Trol® hot gas defrost system has a smash hit like this come along!

The Larkin Water-Saver is THE answer to the growing demand for a high-quality, low-priced cooling tower.

Wholesalers and dealers took to this new line like ducks to water, when it was introduced about a year ago—following more than two years of research and engineering. From coast to coast, the orders poured in—and they keep on coming in, new orders and repeat orders. This is the real answer to whether a product's really got it!

Propeller or Centrifugal Models

A feature with wide appeal is that the Water-Saver is available with propeller fan or centrifugal blower. There is a variety of models in each type.

Dealers and wholesalers praise the capacity ratings, the compactness, and the prices that permit competitive selling. All of these outstanding features are building sales:

Wetted surfaces are of all-heart redwood, with nail-less, interlocked More wetted surface than other towers of co parable tonnage . Bolted construction—unit is easily dismantled in the field—all the way down to the sump · Panels are 16-gauge steel; sump is 12-gauge . Entire unit finished with two coats of baked on corrosion-resistant synthetic enamel a Mastic coated inside . Intake screen available as optional equipment . Motorstwo- and three-ton models with fan have direct drive, totally enclosed motors. All other models are belt driven, with drip-proof motors Propeller fan and blower assembly easily interchangeable in the · Centrifugal blowers have bronze sleeve bearings; belt-driven propeller fans have neoprene-sealed ball bearings . Stainless steel shafts on belt-driven propeller model · Blowers, propeller fans and scrolls are hot-dip galvanized and dynamically balanced after fabrication . All-bronze float and float valve . Gravity-type distribution basin-low pumping head over tower . Distribution basin cover supplied as standard equipment. Water outlet in sump has large strainer and anti-cavitation plate, easily removed for cleaning.

Dealers: get in touch with your wholesaler now about this great new Larkin line. Wholesalers: get in touch with your Larkin representative, or write us direct, for full information.



PLANNING DETAILS . . .

Continued from page 41

struction, with floors of quarry tile and ceilings of plaster. Interior finish of all walk-in refrigerators consists of ceramic tile walls and quarry tile floors. Exterior of walk-in doors is finished with stainless steel.

All equipment was especially designed for easy cleaning, eliminating crevices, channels, or concealed ledges. Floor drains are located to facilitate easy mopping.

Safety aspects, too, were given careful consideration. Mechanical equipment was specified with the safety factor in mind, and all personnel were thoroughly schooled and trained by the Schultz organization in the proper use of all equipment. Constant supervision assures close adherence to the safe working procedures outlined.

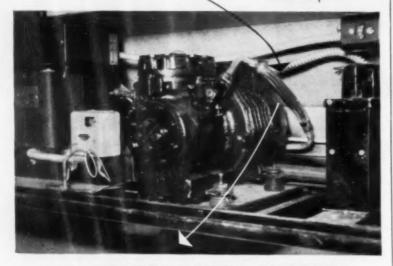
Water faucets are located conveniently to the cooking area kettle section and ranges to eliminate need for lifting large kettles of water. Kettle section is recessed and sloped slightly to prevent draw-off water from flowing across the floor. Floor drains are provided in this recess.

Rubber mats are provided and used in the dishwashing room so that accidental splashing of water on the floor does not make working conditions hazardous. A floor drain also is located in this room.

Receiving, checking and weighing of all in-coming supplies takes place at the receiving department located at street level directly under the main kitchen and cafeteria. An adequate and segregated section,

Keep it quiet...





with FLEXON VIBRA-SORBERS

Leak-tight, fatigue resistant Flexon Vibra-Sorbers are the preferred way to isolate compressor noise and vibration. Installed in lines to and from compressors, Vibra-Sorbers absorb motion and noise before they can get into rigid piping or tubing. This means longer life for the system and less danger of leakage through fatigue cracks or loosened joints.

Vibra-Sorbers are manufactured in standard I.D.'s from \$\frac{1}{16}" through 4". Sizes \$\frac{1}{16}" through 1\frac{1}{2}" are

listed by Underwriters' Laboratories, Inc. Standard lengths are scientifically determined to prevent whipping." They are made of bronze with extended standard size copper tube ends, straight or bent, or with male or female sweat couplings. Also available with threaded fittings. Rubber covered units and specially tailored assemblies to fit your designs can also be furnished.

Write for further information and specification sheet.

CHICAGO METAL HOSE DIVISION DTL 1321 S. THIRD AVENUE . MAYWOOD, ILLINOIS

Flexonics FORMERLY CHICAGO METAL HOSE CORPORATION



Manufacturers of flexible metal hase and conduit, expansion joints, metallic bellows and assemblies of these components. In Canada: Flaxonics Corporation of Canada, Ltd., Brampton, Ontario Circle No. 62 on Reader Service Card

HITS SIX FIGURES



THE 100,000TH Carrier packaged commercial air conditioning unit is being given a silver plaque by Mayor Delesseps S. Morrison of New Orleans, Installed in Antoine's famous restaurant, the unit is a 5-ton water-cooled model. Looking on here are C. V. Bankston, Carrier sales manager of industrial sales; Mimi Langguth, dressed in 1902 costume; and Mary L. Narz wearing a 1954 Tina Loser dress.

partitioned by wire dividers, provides root storage facilities and dry storage for canned goods, condiments, and other basic supplies. An electric dummy elevator is located in the center of the storage section to permit easy movement of supplies to the kitchen above.

Dairy products, vegetables, fruits, and meat go directly from the elevator to their respective refrigerators in the main kitchen area. Size of these refrigerated facilities was predicated on the frequent deliveries made possible under existing local food supply conditions, but consideration also was given to possible emergency requirements and the potential future growth of the hospital.

Portable trays and tray carts are used to transport ready-to-

HALSTEAD & MITCHELL **COOLING TOWERS**

for

LONG LIFE PROTECTIO WOOD EXPOSED TO

TAKE ROUGH-CUT WOOD for wetted deck surfaces



... because rough-cut wood "wets" more effectively ... presents more evaporating surface . . . than any other suitable material. The wetter the evaporating deck of a cooling tower, the more efficiently and economically it operates. Wetted deck surfaces of all H&M Cooling Towers, commercial or residential, are rough-cut wood.

THEN KOPPERS PRESSURE-CREOSOTE



... because the most permanent and positive wood preservative known is creosote. Koppers Pressure-Creosoting results in 100% penetration . . . and thus protection of the constantly wetted wood against attack by fungus and marine parasites . . . and . . . protection against chemical deterioration from acids in water.



2 thru 120 Tons

HERE'S WHY ONLY HALSTEAD & MITCHELL OFFERS THE 20-Year Guarantee!

on the wetted deck surface against rotting or fungus attack

Creosote contains 162 elements toxic to fungus growth and parasites . . . protection which is simply not matched by any other substance.

Creosote is highly insoluble in water . . . making possible the extraordinary long life of the Halstead & Mitchell Guarantee on the wetted deck surface against rotting or fungus attack.

Creosote is proven by over 100 years of use. The exceeding long life of marine piling offers ample evidence of the protection afforded. Only creosote-protected wood can offer such a unique service life record.

REMEMBER! ONLY H & M PROVIDES

SHEET STEEL CABINETS with 3 hydroulic protections STAINLESS STEEL FANS . WEATHER SHIELDING EVERDUR BOLTS for ease of disassembly after years of use

At Leading Refrigeration & Heating Wholesalers Everywhere For Additional Details Write Today for Catalog WT & CT 583



BESSEMER BUILDING, PITTSBURGH 22, PA.

Circle No. 63 on Reader Service Card

cook and cooked foods to cooking and serving areas.

Patients' food is conveyed by means of the electrically heated trucks from the main kitchen to an adjacent service elevator and thence to 12 strategically located small service kitchens throughout the hospital. Each of these trucks has three standard openings to accommodate pans, a "cold" compartment, and a hinged tray to hold one 3-gallon aervoid container.

At the service kitchens, food is served onto pre-heated dishes which are promptly loaded on tray trucks for delivery to the individual rooms. Dishwashing facilities in each of these service kitchens handle patients' dirty dishes.

Food for the employees' cafeteria goes directly from the range section to the cafeteria counter. The counter is fitted with a tray lowerator, silver dispenser, cold pan for salads, double-deck display shelves fitted with sneeze guards, a 6-section electrically heated hot food table with glass protector and stainless steel serving shelf, and an electrically heated portable plate lowerator which plugs in at the hot food section. Another lowerator is kept plugged in at the end of the clean dish table, so that the two can be exchanged for loading and dispensing. Also contained in the cafeteria counter are a food warmer located under the counter and to the left of the hot food section, a roll and dessert section with double-deck display stand (also equipped with sneeze guards), built-in ice cream cabinet, a refrigerated lowerator milk dispenser, an urn stand with two 8-gallon combination urns, and a cut-out for the coffee server and also for a portable cup and saucer lowerator.

The back counter is filled with a reach-through rear loading salad refrigerator, a small reach-in refrigerator, and a stainless steel base section providing storage space for pies, pastries, utensils, and trays. This base also contains a twocompartment sink.

Adequate aisle space is provided between the front and rear counter, and a rear access door between this serving section and the kitchen area permits replacement foods to be brought to the cafeteria section with ease.

The dishwashing room for the cafeteria is so located that hospital employees, when finished with their meal, can drop their dishes off at the pass-through window without crossing the flow of traffic from the serving counter. Dishes are prerinsed, racked, and then run through a conveyor type dishwasher. Silverware, after washing, is dipped into a "silver dip sink" which contains a wetting agent and an electric immersion unit to maintain 180 F water.

Glasses are washed by means of a special glass washer, and a portable glass rack is parked next to the clean glass table to facilitate the movement of clean glasses to the two water coolers located in the dining room area.

Across the corridor from the main kitchen area is a separate room housing a 2000-lb. ice machine which provides both cubed and flaked ice for all of the hospital's uses.





RUBATEX Insulation Hardboard

makes more cents

as insulation jacket for

"K" Factor 0.21

Zero Moisture Pick-Up

No Vapor Barrier Needed

Light Weight-4.5 p. c. f.

Average Compressive

Strength - 60 p. s. i.

act DURADOME LIQUID CARBON DIOXIDE TANK CAR



Application of Rubeton Insulation Hardboard R-103-S to Tank, 6" overall thickness.

Lower Left - Boleton with 4" of R-117-H Rubaten supporting the tank.

Lower Right — More is the application of Rubetex Insulation Hardboard R-103-S to ends of tank. Note how each piece is litted.

The all-welded jacket which

encloses and protects the Rubatex

insulation eliminates all angles



Rubatex Insulation Hardboard R-103-S and R-117-H have been used as insulation for the new streamlined ACF Duradome Liquid Carbon Dioxide Tank Car . . . built at ACF's Milton, Pennsylvania, plant for Pure Carbonic Company, a Division of Air Reduction Co., Inc., for transport of liquified carbon dioxide.

or Pure Carbonic Company, a Division of c., for transport of liquified carbon dioxide.

Write 44 about your low temperature insulation application. Let us show you how Rubatex



GREAT AMERICAN INDUSTRIES, Inc. RUBATEX DIVISION

Circle No. 65 on Reader Service Card

Insulation Hardboard can make more cents for you.

IT'S A NATURAL . . .

Continued from page 35

CABLE: "Those are good questions. The sale of used equipment definitely is an important factor, especially in the early stages of the game when the dealer is working with the smaller users of food service equipment. Actually there are many times when having the right price of used equipment available at the right price may be the determining factor which will swing a sale your way.

"You have to handle trade-ins in this phase of the business as in any other, but you have to be even more critical in your appraisal of them. This is especially true in the field of cooking equipment, for when you put fire to anything it deteriorates in time. Actually much of the equipment you are forced to take in trade has no re-sale value, and you're bet-

ter off to junk it. Needless to say, you must gauge your trade-in allowances accordingly."

QUESTION: We've noticed that some dealers in food service equipment handle a complete line of supplies, from pots and pans down through the china, silver, and glassware, while others handle none at all, What's the answer?

CABLE: "There's no clear-cut answer to that question. Whether or not a dealer goes into the handling of supplies, and if so how far he goes, will depend largely upon local conditions. As for ourselves, we go all the way, and we have found that for the dealer who does handle china, silver, and glassware, an attractive showroom where the place settings can actually be seen on the table is of utmost importance."

QUESTION: You mentioned briefly earlier in this discussion that once a dealer became soundly established in the food service field a planning and layout service was an essential aid in going after new installation business or complete remodeling jobs. Just how does this planning differ from the store planning done by the market equipment dealer?

CABLE: "Basically the dealer is faced with the same problem. To become truly successful he must build himself a reputation as a consultant in the food service field. This takes plenty of time, study, and experience, for the science of food service has become a highly technical one, involving the planning of smooth, uninterrupted flow of materials through the receiving, preparation, and serving areas.

"Obviously, the more a dealer and his men know about the food service field, the better prepared they will be to cope with any problems with which a customer may confront them. Somewhat more detail usually is required in food service layouts than in food store plans, and in new or remodeling work it is frequently necessary to include roughing in specifications for the architect. Every

NATIONAL PNEUMATIC CO., INC.

opens the door to new service business for YOU!

- Need to expand your business? Want more income? Here is an exceptional opportunity for all qualified air conditioning and refrigeration equipment servicemen.
- National Pneumatic Co., Inc., is introducing a brand-new electro-hydraulic product that will be wanted by every alert businessman, especially owners of supermarkets, restaurants, stores and buildings. In fact, anyone who uses air conditioning or refrigeration equipment is a potential customer. Thus, it sells to your present customers and helps you win new customers.
- This product is simply designed easy to operate. Learning how to service it takes only 4 hours through a special "one lesson" correspondence course that you can study in your own office, shop or home.
- With every unit, National Pneumatic Co., Inc., issues a 1-year warranty to the owner and a service policy to you, the territorial serviceman. This policy is extremely liberal. It guarantees payment to you in advance. And you can continue to hold the service contract after the warranty expires.
- In addition, you will have sales rights in your territory which enable you to take orders from your service customers at a substantial profit.
- ◆ This opportunity could be the turning point of your business career. The market includes hundreds of establishments in your neighborhood. Nation-wide consumer and trade advertising has already produced widespread demand and numerous inquiries. Distribution is being established through over 1000 distributorships and dealerships from coast to coast.
- If you would like to know more about this profitable sales-service opportunity, write us today. Just ask for our "Service Folder" it gives complete details. Write: Service Department Automatic Door Division.

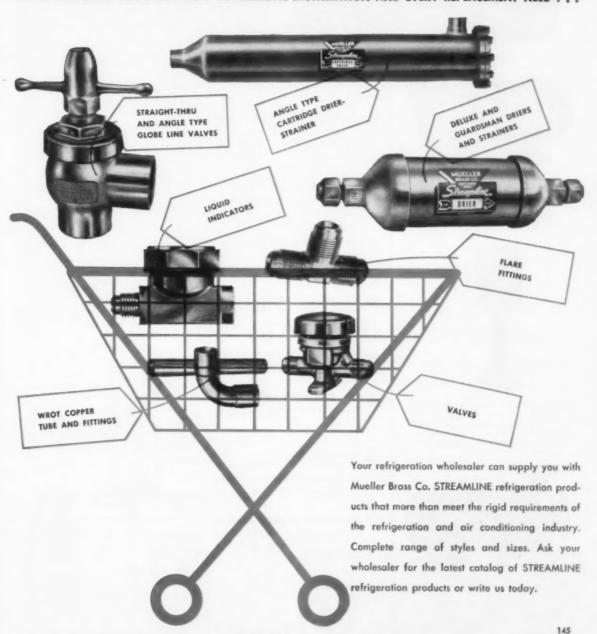
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ONE STOP SHOPPING FOR ALL REFRIGERATION PRODUCTS

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PORT HURON 10, MICHIGAN

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IMPORTANT PUMP FACTS FOR AIR CONDITIONING SERVICE



Class KRVS Motorpump built in ¼ to 7½ hp sizes with mechanical seals. For smaller air conditioning installations and compect evaporative coolers.



Class KRVL immersion type Motorpump built in ¼ to 7½ hp sizes without seals or packing. Ideally suited for recirculating liquid on evaporation coolers with a sump.



Class RV Motorpumps built in 1 to 75 hp sizes with conventional packed stuffing boxes...mechanical seals optional. For practically any size air conditioning installation.

- EXCLUSIVE DESIGN FEATURES of Ingersoll-Rand Motorpumps give you advantages found in no other pump!
- INGERSOIL RAND MOTORPUMPS are the most efficient pumps on the market today!
- LOW FIRST COST Smaller pumps do work of larger size pumps. You pay less for the same gpm.
- 3 LOW OPERATING COST You get more gallons per KW Hr. of power input!
- 4 SPACE SAVING Compact I-R Motorpumps fit into small space!
- **(5)** LONG, TROUBLE-FREE SERVICE Install these rugged pumps and forget them!
- 6 EASY INSTALLATION—Pumps operate in any position . . . bolt easily to floor, wall or equipment. No special foundations needed!
- AVAILABLE FOR IMMEDIATE DELIVERY— Call the nearest Ingersoil-Rand branch office. For complete details write today.

salesman should have a working knowledge of mechanical drawing, so that he can do everything but the finished work himself.

"Even a knowledge of food quality, recipes, and cooking methods can be extremely important, for superior quality of the food served is the most important competitive edge that any restaurant can have. Obviously anything the dealer can do to help his customers gain such an edge will mean satisfied customers and repeat business."

QUESTION: We've explored pretty thoroughly the problems facing the dealer who might want to edge his way into the food service field, so now let's ask the 364 question—is there sufficient potential in this field to justify the time, effort, and expense involved in building a complete food service operation?

CABLE: "That brings us right back where we started — and the answer can only be an unqualified and most emphatic 'Yes!' Actually, the average food service installation uses more refrigerated equipment than the average food market. Even the little restaurant doing a business of only \$400 to \$500 per day needs anywhere from 4 to 6 compressors, not counting air conditioning equipment.

"The business is there. As we mentioned earlier, entry into the food service field has made it possible for our organization, over a period of time, to double its total business volume. It can do the same for any food market dealer willing and able to make the move."

MITCHELL 1955 PRICES UPPED \$20 PER UNIT

Across-the-board retail price increases of \$20 per unit have been recommended by Mitchell Mfg. Co. on eight of its 1955 model room air conditioners.

Models excluded in the increase are the M-1245 and M-12485 1½ hp models for which recommended retail prices are \$499.95 and \$509.95 respectively, and the M-235 1/3 hp for which no recommendation is made.

Ingersoll-Rand

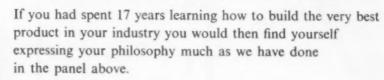
Known for Quality

No matter how well built the air conditioning or refrigeration equipment you install...

if its performance depends on automatic controls... it can be no better than the controls with which it is equipped.



QUALITY HAS ALWAYS BEEN THE WHITE-RODGERS POLICY...



White-Rodgers has never — and never expects to — build anything but the finest controls that can be made. You probably already know this, but we feel it worth emphasizing at this stage in our industry's development.











ST. LOUIS 6, MO. TORONTO 8, ONTARIO



AND SAVE \$800 A YEAR!

Eliminate the "Throwaway" habit—Get the "RAPID REFILLABLE" habit!



You get more safety, more satisfaction, more protection on every installation. All "RAPID" Refillable Dehydrators are UL listed.

quality, safety, economy,

See your wholesaler or write for catalog.

PRODUCTS CO.

6240 OGDEN AVE.

BERWYN (Chicaga Sub.) ILLINOIS

Circle No. 70 on Reader Service Card

OPPORTUNITIES

(Classified Advertising)

Rates: for "Positions Wanted," \$6.50 minimum, limit 25 words. For all other classifications, \$4.00 minimum for 25 words or under, each additional word 20¢. Boldface type or all capitals, \$10.00 minimum for 25 words or under, each additional word 25¢.

BUSINESS OPPORTUNITIES

Established 20 years Commercial Refrigeration & Air Conditioning Sales-Service business and building for sale in prosperous midwest city of over 70,000. Good reputation, modern well-equipped shop. Ideal partnership set up. Price uncer \$50,000 including large building with large apartment. Terms. Box 2355, COMMERCIAL. REFRIGERATION & AIR CONDITIONING.

POSITIONS AVAILABLE

A regional supervisor will be added to the staff of a refrigerator display case manufacturer early enough for the individual chosen to benefit from the peak business which will be available in 1955. We are looking for a man who can build on the base of present distribution, adding new distributors, helping them to train salesmen, etc. We'll gladly lay all our cards on the table without any fanfare in a confidential, personal interview which will enable you to compare what you make now with what you can earn with us. If we weren't sure you could do better with us, we wouldn't

USED | ICE PLANT EQUIPMENT

Vilter Ammonia Compressors, duplex units, each unit consists of two eight cylinder compressors direct connected to a 200 HP, 440 volt, 60 cycle electric motor

Vilter Ammonia Compressor, duplex unit, consisting of two twelve cylinder compressors direct connected to a 150 HP, 440 volt, 60 cycle electric motor

2 30 ton Vilter Pacice machines

36" dia. x 16' Vilter Ammonia Condenser with 2 — 36" dia, x 16' receivers, with stand

1 36" dia. x 16' Vilter Ammonia Condenser with 1 — 36" dia. x 16' receiver, with stand

1 General Electric motor control center

UNITED CONSTRUCTION CO. P. O. BOX 299 . WINONA, MINNESOTA

PHONE WINDNA 5226

PHONE WINONA 5226

be running this advertisement. Give us a brief history of what you have done in commercial refrigeration or related fields, tell us about your present activities, etc. Box 2155, Commercial Refrigeration & Air Conditioning.

ASSISTANT TO SERVICE MAN-AGER: Opportunity to assume managerial responsibility as assistant to service manager for large manufacturer of air conditioning, heating, ventilating and heat transfer equipment. Service Department is expanding with the rapid growth of the company.

Excellent chance to advance for an engineer with service experience in air conditioning and refrigeration industry. Send resume of qualifications to: Manager Staff Employment, THE TRANE COMPANY, La Crosse, Wisconsin.

Our 1955 outlook is such we need to add one or two good district sales managers. If one of the territories is not near your present home, it will pay you to consider moving because the proposition we have to offer is undoubtedly one of the best in our industry. Our products are com-mercial refrigerators, distributed nation-ally and abroad. We have basic distribution in the territories to be assigned. If your earnings are under \$15,000 and you have reached what you consider your top potential, you probably shouldn't answer this advertisement. We can guarantee you minimum \$10,000 earnings your first year and if you are the man for the job, you should easily move this up to the \$25,000 bracket. A brief story on your experience, present connection, etc., will lead to a personal, confidential interview with a Home Office executive. Box 2255, Commercial Refrigeration & Air Conditioning.

LINES AVAILABLE

Users of ice from 500 lbs. to 5000 lbs. daily need our INSTANT ICE MA-CHINE. Distributors and Dealers—open the door to these new important refrigerating accounts. Substantial profit. Territories available. Write Liquid Freeze Corp., 1133 24th St., Oakland 7, Cal.

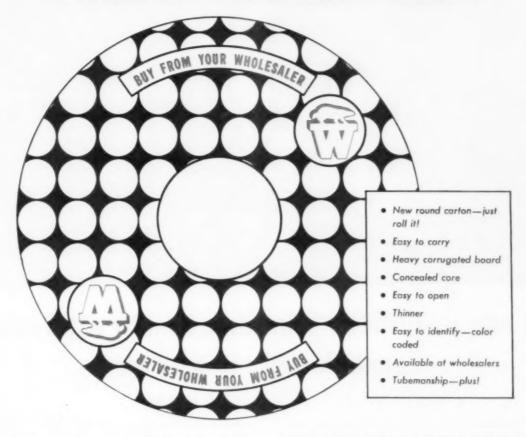
FACTORY REPRESENTATIVES. The following states have been opened and have active accounts — WISCONSIN — IOWA — MINNESOTA — NEBRASKA — NO. & SO. DAKOTA — MONTANA — WYOMING — COLORADO — NEW MEX'CO — ARIZONA — UTAH — NEVADA — SOUTHERN CALIFORNIA — TEXAS — KANSAS — MISSOURI — ARKANSAS — LOUISIANA. Most complete line in the Industry featuring Restaurant and Food Market Display and Storage Refrigerators — Walk-in Coolers — Kitchen, Hospital and Institutional Refrigerators — Self-service Display and Storage Freezers with automatic defrost. Modern line of all steel sectional display shelving and gondolas.

Only qualified representatives in one or more fields will be considered. Our Company a pioneer in the Industry since 1899. Send your resume in confidence to PRESI-DENT, FOGEL REFRIGERATOR COMPANY, 5400 Eadom Street, Philadelphia 37, Pennsylvania.

BUY FROM YOUR REFRIGERATION WHOLESALER

Introducing

A ROLL OF TUBE THAT ROLLS!



Here's another red-hot first for Wolverine—a rall of tube that ralls!

That's right! Wolverine has developed a new round carton that lets you roll copper water tube, refrigeration tube, or automotive tube—like a hoop—to storage, truck, or job site. It's easy to carry—there's a hole in the middle of the carton so that you can slip it over your arm, or use it as a reel. The new carton is made of husky corrugated board and the concealed core protects the tubing from damage due to dropping or other abuse.

Easy-to-read identifying symbols are spotted around the outer edge of the carton so that they can be read from any angle. To speed up identification, symbols are color coded as another convenience.

There are plenty of other benefits, too. The carton is thinner, lets you store more tubing in less space. It's easy to open—just a tug on the gummed perimeter tape is all that's needed. And best of all, the carton contains the same high quality Wolverine tube you're so used to using. Wolverine Tube, 1405 Central Avenue, Detroit 9, Michigan.

BUY FROM YOUR WHOLESALER



WOLVERINE TUBE

Manufundurers of Quality Controlled Tuling and Estraded Alaminam Shaper

PLANTS IN DETROIT, MICHIGAN, AND DECATUR, ALABAMA. SALES OFFICES IN PRINCIPAL CITIES.

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Circle No. 72 on Reader Service Card

& AIR CONDITIONING . FEBRUARY, 1955

87



The dual-vection* offers clean, hot water heat in winter ... cool dehumidified air in summer

The UNARCO DUAL-VECTOR is a quality product newly designed to make economically feasible the combination of a fine hot water heating system and a chilled water cooling system.

Now you can have all the advantages of hot water heat—cleanliness...smooth, even heat...quiet operation—and in summer, cool, conditioned air. DUAL-VECTORS are used in a series, one-pipe or two-pipe system, providing forced hot water heat or chilled water cooling using the same system.

What's more, the initial cost is often less than other combination systems which lack the acknowledged advantages of "wet" heat. And because each unit is individually controlled, you can heat or cool as few or as many rooms as desired. Thus the money saved in winter will help pay for your summer cooling comfort. Clip and send in coupon below for detailed information.

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DUAL-VECTORS are ideal for homes, apartments, hotels, metels, offices and institutional buildings.

HEATING & COOLING PRODUCTS

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City	State

COOLING

Circulation and Humidity Control

HEATING



COMMERCIAL



INDUSTRIAL



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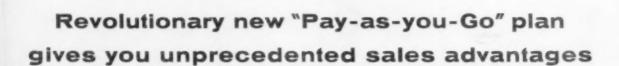
AIR CONDITIONING Section

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NOW! AIR CONDITIONING

without capital investment



- No one else can offer you this tremendous opportunity to cash in on the highly profitable office building, hotel, hospital and motel markets for room air conditioners.
- 1. Perfection finances the ENTIRE cost including equipment, installation, wiring and servicing.
- Your customer can rent . . . lease . . . or Buy it on Perfection's 5-year Amortization Plan.
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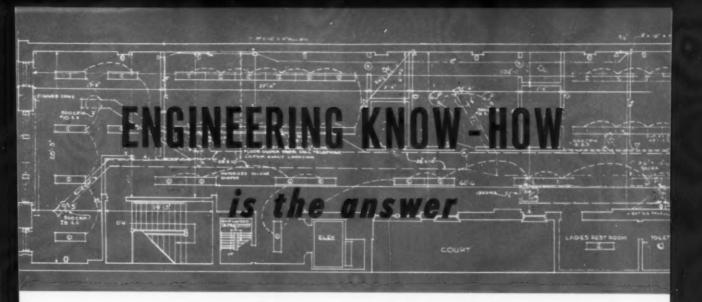
And with Perfection "Inside-the-glass-line" room air conditioners you have complete building management approval

- Fit ANY size or style of window double-hung sash or casement 33½" to 54" wide
- · Doesn't disfigure the face of the building
- Simplifies window washing
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- Four capacities fit identical cabinets
- · One size air filter fits all units

Get The PAY-As-You-Go Facts Now. Write, wire, or phone for full details.

PERFECTION STOVE COMPANY, 7613-8 Platt Ave., Cleveland 4, Ohio

Perfection



THERE'S one sound and sensible answer to the problem of price cutting which has increasingly plagued the field of packaged commercial air conditioning during past seasons, and that's to tackle only those jobs which involve more engineering skill and experience than can be offered by the average outlet selling strictly on a basis of price.

That's the approach which Columbus Refrigeration Co. has used, and used successfully, to corner a healthy share of this type of business . . . at a price which brings a reasonable profit to the firm.

Columbus Refrigeration no longer makes any real

effort to sell the type of job which requires only a packaged unit or two, simply set in place and started up. Instead, the firm is concentrating its efforts on those installations which utilize the same packaged units but also involve extended runs of refrigerant lines or ductwork, special zoning arrangements, or any of numerous other factors which of necessity bring into play the experience and resources of the company's complete engineering department.

Typical of installations of this type are the three described below—one in an office building, one in a church, and one in a manufacturing plant.



D UCTWORK was an essential consideration in connection with each of the four packaged-type air con-

ditioning units installed by Columbus Refrigeration Co., in the plant and office areas of Yardley Plastics Co. Two 5-hp packaged units were required to provide both heating and cooling for the manufacturing space, with a heating coil and blower mounted over them. The necessary ductwork was installed before the ceiling was put in place, and the conditioned air is distributed through ceiling outlets.

Cooling only was required in the office areas of the Yardley building, as the existing heating system was adequate for the job. Here a 5-hp packaged unit was installed to handle the general office space on the second floor, while a 3-hp self-contained conditioner proved

ample to cool the executive offices on the first floor.

As was the case in the manufacturing area, however, properly designed runs of ductwork were required.



PROPER zoning was imperative in the air conditioning installation provided for Christ Memorial Church,

for this structure actually was designed as a dual-purpose building. Its first, but temporary, use was an open church auditorium with a seating capacity for 600 people. Its next, and permanent, purpose was to serve as a Sunday School building which would be divided into a number of separate class-rooms.

Continued on page 99



A IR conditioning of the remodeled Central Building Loan & Savings Co., a four-floor office structure,

presented somewhat of a problem because the top two floors of the conditioned area were occupied by the branch office of a brokerage firm. For this reason, the heat load from people was abnormally high for the area of the space involved. Heavy smoking was expected as a matter of course, so the ventilation facilities had to be selected accordingly.

The client insisted on furring down the ceiling in order to recess the air distributing ducts and the lighting fixtures. This reduced the ceiling height to 8', so that considerable know-how was required in order to distribute the necessary ofm of air through the ceiling out-

Continued on page 99

High Pressure System solves hotel's air conditioning problems

WHEN the Lincoln Hotel in Indianapolis, Ind., decided to air condition a majority of its 400 guest rooms, it faced the usual problems - lack of room for ducts, a variety of structural obstacles, and the unpleasant possibility of having to sacrifice valuable income-producing space.

The answer to all these problems, however, was found in a central type air conditioning system utilizing the high velocity, high pressure method of air distribution. This system was installed with a minimum of building alterations, no loss of revenueproducing space, and with no more than four rooms out of service at any one time.

By reducing supply air temperature to 58 F and increasing velocity to more than 3000 fpm it was found that the vertical ducts and floor branches could be made about one-third the size of ducts in a conventional design. Hence it was possible to enclose the main risers within the building, and to run the floor take-offs along corridor ceilings and around deep beams which would have completely stopped the low pressure

The guest room section is divided into two zones, each served by a separate system operating independently of the other. Refrigerating machinery is in the basement, and chilled water is piped to two penthouses containing fan, cooling coils, dust filters and activated carbon air purifiers. Each fan discharge has a 20' muffler of 2" sound absorbent glass fiber,

NEW CEILING in the loyer of each room conceals the take-aff from the corridor duct. Air discharge is toward the windows,



FLOOR DUCTS are concealed above new hung ceilings in corridors. Acoustical tiles aid "new look".



protected from erosion by perforated metal.

From the penthouses, the main supply ducts cross the roof, drop over the building parapet to bypass the banquet hall and private dining rooms on the top floor (conditioned by separate conventional systems), and enter the building at the 13th floor, continuing downward on all guest floors.

Air Delivery Varies

Above the 13th floor, take-off velocity is approximately 4000 fpm. Since the main risers are constant in size, velocity decreases at each floor to about 3000 fpm, dropping again at each room take-off where velocities vary between 2000 and 2600 fpm. At this point an attenuator chamber reduces air velocity and pressure to conventional levels so it can be handled by a grille on the inside wall. Maximum air deliveries vary between 100 and 320 cfm depending upon room size and exposure.

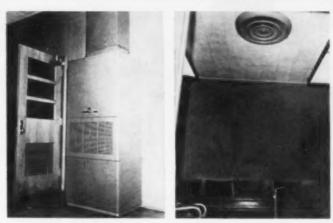
Structural considerations also influenced selection of cooling towers. Instead of a single, conventional, induced draft tower on the roof, two forced draft towers are located on the low roof of an adjacent building. As these were in a court area, noise and drift were important considerations.

Room Control Necessary

Since all types of people will, in turn, be occupying the same room, there had to be some way for the guest to control temperature. A slight modification of the standard Connor high pressure unit permitted the use of a simple wall switch that opens and closes the damper in the attenuator chamber. Thus the guest can virtually dial the room temperature he wants.

Exhaust air is ducted to the roof through the bathrooms and up existing pipe shafts. As bathrooms are used only for short periods during occupancy, it was decided that the exhaust air could be purified and reused to make a substantial saving in refrigeration tonnage and operation. Automatic

Continued on page 99



COOL DELIBERATIONS have been made possible in the grand jury room of the Lucas County, Ohio, courthouse by this 3-ton packaged air conditioner located in an adjacent corridor and connected by ductwork to the ceiling diffuser in the jury room itself. A separate duct loads to the prosecutor's office.

Jury Votes for Cooling

WHEN grand juries convene, somebody usually starts a heavy "sweat"—and soon gets caught in the web of the law. But in Toledo, Ohio, the grand jury itself broke out in a sweat—literalty—and Ralph Bennington of Bennington Bros., local air conditioning firm, solved the problem with the installation of a 3-hp package air conditioner.

About every three weeks throughout the year, the grand jury meets in the Lucas County courthouse for three or four days. Since the room must be closed to the public, the doors are always kept locked, and the windows as well. Even in the winter, the jury found the room most uncomfortable because of the large number of people (about 20) gathered in a room that measures only 15 x 20'.

This past year, however, a big remodeling program was nearly complete in the courthouse, so Bennington suggested that a package air conditioner be installed which would supply 100% cooled and conditioned air to the jury room. Then a separate duct could be run off this unit, he pointed out, to deliver conditioned air to the prosecutor's office whenever the jury was not in session. This deal sounded so practical that the County bought it, and gave Bennington the "green light" on the installation.

Because of the lack of space in the jury room, the air conditioner had to be located in the hallway, just outside the door. The necessary ductwork was then installed to connect this conditioner to the ceiling diffuser mounted in the room itself, directly over the deliberation table.

By designing package air conditioning systems of this type, Bennington is able to condition large areas on a piecemeal basis by means of the "add-on" technique. Since most County funds can be spent only in small portions, or for only one thing at a time, this method of air conditioning makes it possible for the County to air condition one office or one section of the courthouse building at a time, as the remodeling of that particular area is completed.

This Dealer Is "Sold" On Packages

THE greater expense involved in installing a central station system is only one of the many reasons why B. M. Stevens, application engineer of Reliable Plumbing & Heating Co., Marion, Ohio, does such a big job of selling package air conditioning units. To prove his points, Stevens likes to point to two of his package installations which he feels exemplify the advantages of this type of equipment.

The General Telephone Co. of Ohio has its main offices in Marion, but doesn't own the building it occupies. In its offices there are two large rooms, one where the accounting work is handled and the other where the IBM equipment is located. Since this is the second largest telephone company in Ohio, it has a large volume of paper work and needs comfortable conditions for its employees to insure both speed and efficiency in their work.

Stevens installed two 7½-hp units and one 5-hp unit. None of them has duct work, so they can be readily pulled out if the company should move its

offices. Normally, Stevens likes to use package units because they give good zone control, inasmuch as it is possible to have any or all of the air conditioners operating if more cooling is needed in any particular area. This, he feels, is more satisfactory than using a central station system with damper controls for localized cooling.

The telephone company has a "must" requirement for cooling comfort because of the large amount of people working—and working so close to each other. With more than one air conditioning unit, there is always some cooling available even if one of the units should shut down. Last summer, when one of the units went out, and before Stevens could get a serviceman over there to adjust it, the company had a fan blowing air from the IBM room where the two air conditioners were still running.

In some buildings the space needed for duct work is quite an item to consider. But this problem is not Continued on page 121

A 7½-HP PACKAGE cools this large room, for which many engineers would have specified central station equipment.



TWO MORE PACKAGES, one 71/2-hp and one 5-hp, handle the room which houses all of these mechanical computers.



There's money in the air...
when you sell CHRYSLER AIRTEMP!





Packaged Water-Cooled Air Conditioners in 6 models, from 2 to 15 H.P.

Packaged Waterless
(Air-Cooled) Air Conditioners—
nn water needed, no plumbing
required. 2, 3, 5 and 7½ H.P.



trying to sell the hard way?

SEE HOW MUCH EASIER IT IS-WITH THE LEADER!

Airtemp revolutionized the air conditioning industry when it pioneered Packaged air conditioning in 1937. Since then, more Airtemp units have been sold than any other make. And the brand people see most frequently today is the brand they are most inclined to buy! With Airtemp, you don't have to sell the name as well as the product—the name helps you sell the product!

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Air Conditioning's Chrysler Airtemp

AIR CONDITIONING . HEATING FOR HOMES, BUSINESS AND INDUSTRY

SELL

SOUND

CONTROL

ON AIR CONDITIONING INSTALLATIONS

Here are 20 tested tips on reducing equipment noise.

They will help you make good on your promise to install quietly operating air conditioning systems, and thus keep your customers coming back for more.

by Edward F. Dowis

WHEN you have used up all other sales ammunition, and that important air conditioning job is still in the balance, how about selling extreme quietness of system operation as the clincher? This may be a most important factor in a decision to purchase air conditioning at all. Certainly the contractor who shows concern for quiet operation will have the interest of any prospective purchaser, particularly if he can show results in work already installed.

Considerable progress has been made in sound conditioning self-contained equipment, but materials and technique used in installation may be as important as original construction in determining the ultimate sound level. Every component of a remote or central station system should be selected and installed with consideration for and knowledge of its acoustic properties under actual conditions of operation.

Sound intensity is expressed either in terms of decibels or phons. The decibel is measurable with a meter and indicates the actual force of a sound as related to a standard slightly below audibility. One decibel is barely audible; one hundred is louder than is tolerable even in a noisy factory. The number of phons is the same as the number of decibels in a 1000-cycle sound having the same sense of loudness.

The decibel meter consists of a microphone, an amplifier and a rectifying milliammeter. Since the output of the amplifier is determined by the sound picked up by a microphone, the meter can be calibrated directly in decibels. For practical use, it is usually adjusted to be most sensitive to sound frequencies most noticeable to the ear.

An air conditioned space should be more quiet than if unconditioned. Reduction in outside noise should more than compensate for that added by equipment. Sealing windows, weatherstripping doors and keeping them closed, and insulating outside walls will improve operation and reduce noise. Every effort should be made to keep operating noise level below that prevailing in the space when equipment is not in operation. Anything below that will not be noticeable. Following are some effective ways to assure quiet operation.

1. Install Vibration Eliminators in piping to compressors and pumps. Sounds originating in these machines may be transmitted through the piping system and be heard throughout a building. These eliminators are available in standard tubing sizes and, in addition to noise absorption, protect rigid piping from vibration which might cause breaks or leaks.

2. Use Flexible Connections to Motors. Rigid conduit connected to the junction box of a motor may transmit noise from the motor and the pump, fan or compressor being driven. It may also short circuit any sound deadening motor or machine mounting. Flexible steel conduit, commonly called Greenfield, may be used in dry locations and an approved moisture resistant type where moisture may be present. If conduit is removed, the motor must be grounded through the flexible connection or other code approved

3. Use Canvass Duct Connectors to join ducts to fans, conditioners or other noise producing equipment. These should be of heavy cloth, asbestos if there is any fire hazard, and should be connected to both inlet and outlet. They may also be useful for connecting to ducts passing through noisy machine rooms.

4. Check Air Velocity. A common cause of objectionable air noise is high velocity through ducts. It may be possible to reduce air flow and supply air at greater temperature difference to handle the same load. Where this can be done by reducing fan speed, the noise level will be further reduced at the fan.

Enlarging duct sizes may be quite feasible in attic, over-roof or basement locations. An enlarged plenum, with short branches may be more quiet when noise originates in the main. Original layout should allow sufficient area for required air flow at velocities below the permissible noise level.

5. Check Belfs and Pulleys. Deterioration of belts is usually noticed first by squeaking or slapping noises caused by lessened tension or friction or by frayed fabric. Sheaves in pulleys may become worn. These noises may not be continuous, since changes in damper settings may alter fan load. Noise reduction is usual when flat belts, still quite common, are changed to vee drives.

Continued on page 98

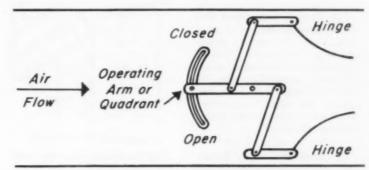


Fig. 1-Low noise volume damper.

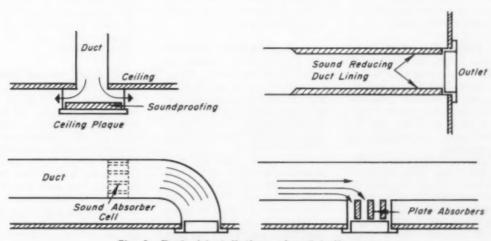


Fig. 2—Typical installations of outlet silencers.

6. Reduce Cross Talk Between Rooms. Ducts serving two or more rooms may transmit sound from one to another, particularly if rooms are close together and ducts short. This can be corrected by sub-dividing the ducts or by suitable acoustic treatment at or near outlets.

7. Minimize Spray Noise. Water sprays in air washers, humidifiers, etc. may be the source of objectionable noise which can be reduced or eliminated by changing to damp filters or other wetted surface. Regular inspection and cleaning of spray heads, sumps, float valves and pumps is the best method of assuring quiet operation. Loose and bent baffle and eliminator plates should also be checked and kept in good repair.

8. Flexible Motor and Machine Mounts will absorb noise from motors, compressors, pumps and fans. These must be carefully engineered and installed so as not to be short circuited by bolts. Vibration absorption is most difficult in low speed compressors, where spring supports may be the only type effective.

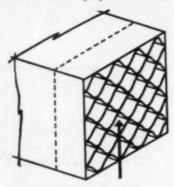
9. Correct Damper Noise. This may require changing settings, repairing loose vanes or louvres or changing to a more quiet design. Figure 1 illustrates a damper vane arrangement having good sound and air distribution qualities at all settings.

10. Check Fan Operation. Fan noise may be either rotational or vortex. Rotational noise is due to the thrust and torque applied to the air. Vortex noise is due to the whirlpool action and the shedding of air at the blade tips. In air conditioning, vortex noise is most important.

In general, a backward curved blade fan is most quiet at higher speeds and at or near the point of highest efficiency. The forward curved fan, usually used at low speeds, emits least noise between point of maximum efficiency and shut-off. Thus, closing dampers will tend to cause quiet operation, while opening them may increase noise. Propeller fans operate best against little resistance or at free air flow.

11. Install Outlet Sound Absorbers. This may be the most economical way to absorb sounds which can not be eliminated. They may be required only at outlets near to fans or conditioners. Figure 2 shows several ways of applying sound conditioning at or near outlets, including duct and plaque lining and absorber cells.

12. Installed Absorber Cells In Ducts. This is probably the most economical and effective method of sound absorption applicable to the duct proper. It consists



ABSORBING MATERIAL

Fig. 3-Sound absorber cell.

of short lengths of sound absorbent material spaced a few inches apart, inserted in the duct proper. The absorption material may be arranged to form square air spaces or curved as in Figure 3.

13. Insulate Ducts and Plenum. Where ducts are thermally insulated, additional sound absorption should not be necessary. It is preferable that ducts be lined on the inside, except where they pass through machine rooms where more sound will be reflected from an outside covering.

A good plenum lining is 2" rock wool covered with muslin and held in place with iron bands fastened to the plenum wall. Where thinner board is used, it is good to mount on furring strips, leaving an air space between the board and plenum wall. Duct linings are usually mounted directly on the duct wall but may be cemented intermittently.

14. Level and Align all units containing rotating parts. This includes window and other self-contained units. Flexible mountings of motor-compressors and fans are designed for level installation, and carelessness in this respect may cause serious vibration. Proper alignment of fan and motor pulleys will prevent off-center operation and end bump.

15. Check Motor and Fan Bearings. Slight wear of a sleeve bearing or any defect in a ball bearing may cause noises of varying magnitude and pitch. Motors with off center rotors may cause electrical as well as mechanical hum. Worn fan bearings or loose pillow blocks may cause rythmic vibration which may be very annoying.

16. Clean Motors, Fans and Ducts. This is most important from both a sound and safety standpoint. Dirt between a motor rotor and stator may cause over-heating and both electrical and mechanical noise. Fan noise is often due to the wheel rubbing against dirt in the housing, or an accumulation of dirt on the wheel causing unbalance.

17. Check Electric Control Equipment. Electric-pneumatic relay magnets sometimes develop a.c. hum, as do motor starters and, less often, damper motors. Often such noise can be reduced by cleaning magnet armature surfaces and oiling bearings. Low or high voltage may also cause noticeable increase in noise.

18. Apply Natural Attenuation In Duct Layout. The sound diminishing effect of straight sheet metal ducts is slight, but elbows and transitions have a reflective effect and may reduce sound 1 to 3 decibels per elbow, depending on size and shape. If the total area of branches is more than that of the main, and each branch and the outlet following it totals more than the main, there will be diminishing sound after each outlet, amounting to from about 1 to 3 decibels.

19. Clean Or Replace Dirty Filters. Restricted air flow due to ENGINEERING KNOW-HOW . . .

Continued from page 91

20. Completely Check Refrigeration System. Shortage of refrigerant, restriction in filters, or insufficient cooling water may cause expansion valve noise. Improper capacity control may cause freezing at coils and air noise. Incorrect expansion valve adjustment may cause partial freezing of coil and prevent circulation of oil due to low velocity in suction lines and evaporator. The compressor may be noisy because of insufficient oil. Improper piping layout may have the same result.

A quiet air conditioning system is always the result of good design, good equipment, good operation and good maintenance. It will serve the owner long and well and may be the contractor's best reference for future installations.

HIGH PRESSURE . . .

Continued from page 93

dampers control the mixing of return and make-up air in selected proportions.

Building alterations were relatively minor. The outside walls and floors had to be cut only once for the main risers. Room take-offs required but a small hole above the door and were furred in the entrance ceiling and the combination of new acoustical ceiling and lighting fixtures actually modernized and improved the corridors' appearance.

Management, as well as guests, has been pleased with performance. Air distribution is draftless yet "live". Noise levels are even lower than anticipated, the maximum being 40 decibels, with 38 decibels at most locations.

DISTRIBUTOR NAMED

Fedders-Quigan Corp. has announced the appointment of the Elliot-Lewis Corp. of Philadelphia as a new distributor. President of Elliot-Lewis is Arch Morton and sales manager is Timothy H. Lewis.

Church Building . . .

Air distribution had to be so designed that after the temporary employment had been met it could be adapted to its permanent function without the expense of unnecessary alterations. Since the preliminary and final load factors were subject not only to wide variations within themselves but also to each other, maximum flexibility of the entire system was of paramount importance.

To achieve this end without undue stress upon first cost or long range operating economy presented quite a challenge to Columbus Refrigeration Co.'s engineering department. This problem was accentuated because complete all-season air conditioning was contemplated. The cooling phase would only be required for actual services and other meetings, while partial heating would be needed during the entire winter season in order to prevent freeze-ups.

A gas-fired water tube boiler was selected. Sufficient baseboard and convector units were provided to automatically maintain a temperature of 45 F at all times. When the building is occupied, this control point is shifted manually to 72 F, a step which calls the heating coils in the air conditioning units into service for as long as the load demand exists at that level. Thereafter, the control point is again manually reverted to the former position.

During the cooling season, the load will vary from zero to full, thus clearly indicating the need for maximum flexibility. This was accomplished by providing two wholly separate air distributing circuits in order to satisfy the zoning demand. Each circuit was equipped for three 5-hp packaged air conditioners, only two of which were actually installed in each circuit at the outset because of financial limitations.

A 40-ton induced draft cooling tower was installed so that adequate capacity would be available to handle the full load.

Office Building . . .

lets in a draftless but entirely uniform pattern. Two separate duct systems handled the zoning requirements.

In order to satisfy the client's demand for maximum available floor area and low noise level, the two 8-hp packaged units were located in a penthouse on the roof of the building. This penthouse also acts as a plenum, A 20-ton induced draft cooling tower was mounted upon structural steel supports nearby. The step-matic control of the completely hermetic units, combined with other standard devices, provided the requisite flexibility to meet the various load fluctuations.

Two 7½-hp packaged units were installed to handle the first two floors of the building. The unit for the first floor was located in the basement, while the second floor unit was installed in an available areaway located approximately midway the length of floor.

Specifications for this job called for the provision of heating, also, so all of the old radiators were removed and heating coils were added to the air conditioning units.

Actually, the original plans for this job called for a different type of air conditioning, but on the basis of its engineering experience and facilities Columbus Refrigeration Co. was able to sell both the building management and the architect on the idea of using unitary equipment.

McINTIRE APPOINTS CANADIAN DISTRIBUTOR

The McIntire Co. has completed arrangements for distribution and sale of DFN refrigeration parts in the province of Quebec and the Maritime provinces.

Rema Refrigeration Mart Ltd., Montreal, will stock a complete line of DFN driers, filters, strainers and accessories for sale to manufacturers and wholesalers only.







New, exclusive engineering developments are landing us big prestige jobs, such as this functionally superior home office for Hallmark Cards now under construction in Kansas City, Missouri.

These Drayer-Hanson HH Series yearround air conditioning units—so often architect specified—give you:

Rugged construction! Frame electrically welded Superior performance! Ample prime and secondary coil surface

Lenger Life! Vinyl-coated glass fiber insulation ... but there is more to it than that!

Write for literature - today

*Architect: Weiton Secket and Associates, Los Angeles. Air Conditioning Contractor: Interestate Heating and Plumbing, Kansas City.



drayer-hanson

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Circle No. 76 on Reader Service Card

USEFUL LITERATURE On Air Conditioning

To obtain the information described below, simply circle on the postcard in this issue the key numbers of the items you wish to receive. We will forward your requests to the companies concerned.

HOSPITAL PROBLEMS in regard to both heating and air conditioning are graphically portrayed in a new booklet prepared by Minneapolis-Honeywell Regulator Co. For hospitals where uncontrolled room temperatures make patients too hot or cold, doctors annoyed, nurses overworked and the housekeeper frustrated, the booklet makes a suggestion of using an individual room thermostatic control system.

Circle No. 121 on Reader Service Card

A RADIANT BASEBOARD HEATING MANUAL that offers illustrated help in step-by-step instructions and methods for calculating heat loss is available from Crane Co. branch offices. The 42-page booklet also shows how to plan and lay out a residential heating installation. Complete how-to-do-it instructions for installing cast iron and copper tube baseboard are included.

Circle No. 122 on Reader Service Card

COMBINING UNDER ONE COVER description and illustrations of various types of Fiberglas Aerocor insulation is a new booklet (GL6.C4) available from Owens-Corning Fiberglas Corp. The 8-page booklet is a complete index to all Aerocor insulations. Aerocor is a soft resilient blanket-type insulation which is used as pipe and duct insulation and a variety of other uses. Circle No. 123 on Reader Service Card

SIMPLE INSTALLATION INSTRUCTIONS for central-type air conditioning units which it makes are outlined in a 4-page brochure issued by General Air Conditioning Corp. The units are said to be designed to fit the average home, and come in 2 hp and 3 hp sizes. Manufacturer says that only two tools—saw and screwdriver—are needed to install these units. Back sheet has room for floor plan sketch which can be completed and mailed to manufacturer for his recommendations.

Circle No. 124 on Reader Service Card

A NEW 24-PAGE CATALOG (GK-954) featuring a complete line of equipment for chilled water cooling systems and forced hot water heating systems is available from Bell & Gossett Co. The company says that new products and reference to new applications makes this the most complete product catalog it has ever published. Circulating pumps, centrifugal pumps, valves, fittings, air vents, etc. are some of the items covered.

Circle No. 125 on Reader Service Card

DECORATIVE FOUNTAIN NOZZLES for use in air conditioner water cooling applications are described and illustrated in a new bulletin (SK Bulletin 6A-FN) issued by Schutte and Koerting Co. This is believed to be the first reference guide offered on decorative fountain nozzles. It contains descriptions and drawings of various fountain styles, and tabular data on pipe and orifice sizes. It also illustrates several installations now in use.

Circle No. 126 on Reader Service Card

HUMIDITY CONDITIONING for marine service is described in Bulletin K-254 recently released by the Kathabar Div. of Surface Combustion Corp. Included in this 4-page illustrated bulletin are the requirements for dry-cargo conditioning as set by U.S.M.A. for C-4 Marine Class ships and ship operators.

Circle No. 127 on Reader Service Card

TIME AND LABOR SAVING devices for the metal working industry are shown in the new catalog issued by Duro-Dyne Corp. Of special interest to readers are the description, illustration and details of the company's damper regulators, quadrants and accessories; Duro-Vane rail, which allows making of air turning vanes; pre-assembled Duro-Metal-Fab for flexible duct connectors; and multi-blade damper kit.

Circle No. 128 on Reader Service Card

TWO MAJOR PROBLEMS in air conditioning systems are dealt with in a new bulletin (G-108) recently issued by the Russel R. Gannon Co., Inc. The bulletin illustrates the company's Frigidstor system of water saving, which deals with two major problems: 1. Growing scarcity of water and increasing cost of sawage disposal; 2. peak load which power companies are always fighting on their power lines. The system uses air-cooled condensers, and stores up cooling during off-peak periods.

Circle No. 129 on Reader Service Card

WATER TREATMENT EQUIPMENT for commercial and industrial as well as domestic needs is outlined in the new catalog issued by Water Treatment Engineering Corp. Included are data and specifications information on softeners is 36,000 to 220,000 grain capacities; iron, sulphur and odor purifiers of 350 to 1000 gph flow rates; 30,000 grain rental-size softeners; commercial and industrial softeners, boiler feed water treatment, and rental-unit regenerating equipment.

Circle No. 130 on Reader Service Card

FUNCTIONS OF A NEW GLASS BLOCK designed especially for use in areas with severe sun conditions are described in a new booklet available from Kimble Glass Co., a subsidiary of Owens-Illinois Glass Co. Known as Owens-Illinois No. 80-F, the glass black is designed for southern exposures to reject unwanted heat and light when the sun is at or near 45° altitude.

Circle No. 131 on Reader Service Card

(Turn to page 110 for more Useful Literature)



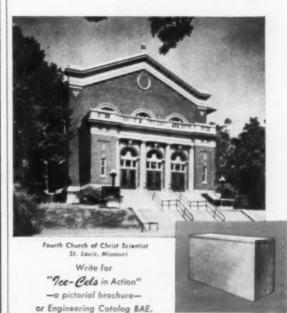
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Circle No. 77 on Reader Service Card

WHAM'S NEW

in Air Conditioning Equipment

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your request will be forwarded directly to the companies concerned.

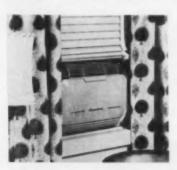
(For more New Products turn to page 114)

Room Air Conditioners

Product: New 1955 room air conditioners.

Manufacturer: Carrier Corp., Syracuse, N. Y.

Features: Window units range from 1/3 to 1 hp; console models are available in 1 and 1½ hp models. Three colors offered: Glacer



Grey, Colonial White, Suntan-to blend with all decors. "Hideaway" installation continues as a leading feature. Unit can be installed in any one of 14 ways, it is said, including through a framed opening in wall or built into storage furniture such as bookshelves and cabinets. Can be installed in casement windows without cutting mullions. Compressor and fans scientifically muffled for quiet operation. Units from 1/2 hp up have thermostats for automatic operation. Prices down \$40 to \$60 from last year. Circle No. 161 on Reader Service Card

Water-Cooled Air Conditioner

Product: "Royal-Aire" selfcontained water-cooled packaged air conditioner with a pump-down control system.

Manufacturer: Union Asbestos & Rubber Co., Chicago, Ill.

Features: Unit can be equipped with a heating coil. Pumpdown control insures a minimum of gas remains at low pressure in the coils when the unit shuts down, resulting in less electricity required



for starting, All service connections are readily accessible. Blower section can be used for either vertical or horizontal discharge. Controls located behind push-in name plate. Fresh air connections located on right and left hand sides. Entire case is lined with 1/2" insulation bonded to the metal with mastic. Large squirrel cage fan has capacity to be used with larger motor when the unit is installed with duct systems. Furnished with accessible hermetic compressor, unit is available in 3, 5, 71/2, 10 and 15-ton capacities. Each unit has 5-row cooling coils mounted

Circle No. 162 on Reader Service Card

Packaged Boiler-Chiller

Product: Gas-fired package designed for forced water air conditioning systems.

Manufacturer: Hydraline Products Div., Borg-Warner Corp., Detroit, Mich.

Features: Boiler-Chiller combination uses only 2 sq. ft. of floor space. Stands only 66½" high and when desired, boiler and chiller units can be installed side-by-side to measure only 36" high,

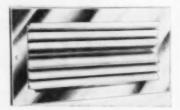


48" wide and 24" deep. Boiler unit furnished completely assembled. Shipped ready for connection to water, gas and electrical lines. Unit is A.G.A. approved for use on combustible flooring. Factory-assembled chiller is shipped complete with hermetically sealed compressor. Package available for 2 and 3-hp systems. Capacities: 23,800 Btu/hr and 33,400 Btu/hr net refrigerating effect; to 88,000 Btu output for boiler.

Circle No. 163 on Reader Service Card

Adjustable Grille

Product: Series 200 grille designed to handle demands of distributing both cool and warm air from ceilings and high sidewalls.



Manufacturer: Titus, Inc., Waterloo, Iowa.

Features: All louvers can be moved to give 1, 2, or 4-way diffusion. Extruded aluminum louvers are especially wide and are curved to increase efficiency. Grilles applicable to overhead forced air systems, high sidewall installations, replacement of old

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style outlets when air conditioning is added, replacement of old outlets to correct drafts, and for bringing in overhead air conditioning where steam or hot water is presently used. Also available with dampers.

Circle No. 164 on Reader Service Card

Air System Cleaner

Product: "Spic-Span" model 950H heating and air conditioning system portable vacuum cleaner.

Manufacturer: Premier Co., St. Paul, Minn.

Features: Large filter area allows increased dirt capacity. Nonpleated filter gives 3 times former



area with no overlapping or clogging. Filter also allows cooler motor operation and higher cleaning efficiency. Unit is powered by ½-hp, 115-volt ac/dc motor with precision ball bearings, sealed in lubricant. Tank capacity of this 19" high cleaner is ½ bushel. Included with the unit is a 30' rubber covered cord with a molded plug, flexible steel hose, crevice tool, reducer coupling and fabric and throw-away filter. Casters and complete line of special tools are available.

Circle No. 165 on Reader Service Card

Factory Air Conditioner

Product: Self-contained "Airmaster" air conditioner for industrial and commercial buildings.

Manufacturer: Alco Refrigeration, Cleveland.

Features: Entire installation is on roof—out of sight and hearing but easily available for service. Only inside evidence is single opening in ceiling for combination airdiffuser air-return. Requires no factory floor space nor duct work. Unit is air-cooled so requires no



plumbing hookup or drains. Can be installed without interfering with normal factory or office work. In multiple installations each Airmaster is actuated by its own thermostat for economical zone temperature control.

Circle No. 166 on Reader Service Card

Waterless Conditioner

Product: Air-cooled conditioning unit with built-in thermostat.

Manufacturer: Lighthouse,
Inc., Cleveland, Ohio.

Features: "Rimbach" conditioner contains two 20 x 25 x 1" filters, two 10" diameter blowers and a hermetically sealed, 4 cylinder, 7½-hp condensing unit. This unit, using F-22, is designed



for roof installation. Condensate from cooling coil runs onto roof and evaporates. All service work is done on the roof. All motors are 220/208 volt, 3 phase, 60 cycle, unless otherwise requested. Ducts can be run either to proper size ceiling outlet or to a distribution system. Capacity is 92,000 Btu. Entire unit warranted for 1 year with a 5-year warranty on compressor.

Circle No. 167 on Reader Service Card

Electronic Cleaner

Product: "Dustronic" electronic air cleaner. Manufacturer: Radex Corp., Chicago, Ill.

Features: Unit can be attached to any forced air furnace. A portable unit is also available for use in a single room. Furnace unit is



so located that it filters unheated or return air before it enters the heat chamber. The air is then circulated through the home, cleaned and warm, by the furnace blower. A series of mechanical and electrostatic filters inside the unit catch practically all impurities. Finer particles which might evade the mechanical filters are deposited on the collector plates of the electrostatic section. Collector plates are covered with an adhesive solution which can be washed off when necessary. Recoating plates with an adhesive restores former efficiency. Unit is flameproof, will not produce ozone. Circle No. 168 on Reader Service Card

Baseboard System

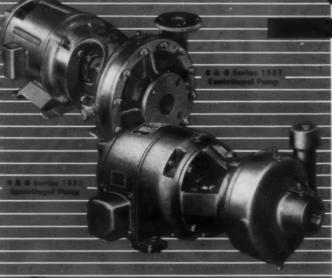
Product: Integrated yearround baseboard heating-cooling system.



Manufacturer: Vulcan Radiator Co., Hartford, Conn.

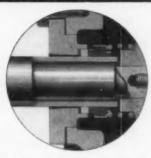
Features: With a flick of a switch, owner can obtain either heating or cooling from the same baseboard installation. System allows independent operation of the boiler for domestic hot water and

STOP HERE... FOR Plus Values IN AIR CONDITIONING EQUIPMENT



EXTRA QUIET PUMPS

FEATURING WEAR-PROOF "REMITE" SEAL



B&G Series 1522 and 1531 Pumps offer an outstanding array of features for dependable, quiet, low-cost operation. The "Remite" Mechanical Seal, for example, ends leakage troubles. It's self-lubricating—harder than glass—wear-proof.

These pumps are machined to exacting specifications and carefully assembled under close inspection—in every detail designed to give long trouble-free service.

EVAPORATORS AND CONDENSERS





B & G SERIES "HR" EVAPORATOR

You'll find plus value in the unique design of this evaporator which prevents oil-trapping in the head passes. The lower tubes in each pass are located very close to the baffle plate, permitting any oil entering the passes to travel freely with the Freon vapor back to the compressor.

Other features include movable steel legs, for easy mounting. The shell connections extend well beyond the insulation cover—assure easy installation.

B & G CONDENSERS

B & G precision-built Condensers offer time-tested design—rugged construction—scrupulous workman-ship—all combined to provide top performance over a long service life. These units are built to ASME Code U-69 regulations and are certified by Hartford Steam Boiler and Inspection Service.

B & G Centrifugal Pumps

B & G Evaporators

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Check catalogs desired—write your name in margin and mail to us.



BELL & GOSSETT

Dept. DT-45, Morton Grove, Illinois

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Circle No. 80 on Reader Service Card

simultaneously supplies chilled water through the baseboard piping system for cooling purposes. Incorporates a chiller providing chilled water. A central blower distributes controlled quantity of air under the entire length of each baseboard radiator element. Condensation is carried off via builtin drain ducts.

Circle No. 169 on Reader Service Card

Remote Type Cooler

Product: Remote type "Roomaire" room cooler for year-round air conditioning of individual rooms in multi-room installations.

Manufacturer: Young Radiator Co., Racine, Wis.

Features: Units' cooling, heating, ventilating and filtration of the air is subject to individual room control. Only 3 pipes serve each unit; water supply, water return, and drain. Recirculated or mixture of recirculated and outside air is drawn through cleanable type filters by blower fans. Air is blown over heat transfer coils and into conditioned space.



Damper in fresh air inlet is manually adjustable. Condensed moisture during cooling cycle is carried off by the drain. Fans can operate independently to provide only ventilation. Water flow through heat transfer coil is controlled by a manual valve or an automatic valve operated by temperature control device.

Circle No. 170 on Reader Service Card

Conditioner Line

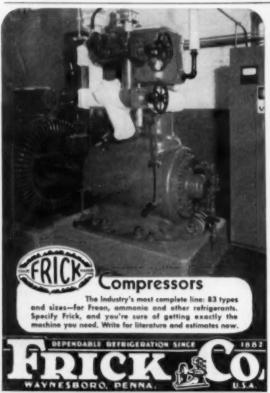
Product: Four models of "Vornado" 3/4-ton room conditioners.

Manufacturer: O. A. Sutton Corp., Wichita, Kan.

Features: For double-hung windows, Deluxe, Standard and Reverse Cycle types are available,



while a casement window unit (illustrated) is available for this type installation. Intake and recirculated air is forced over fiberglass filters for complete filtration of foreign elements. Motor and compressor mounted on springs and rubber to insure silent operation. Unit has low-speed motor,



Desirable territories available to qualified Distributors

Circle No. 82 on Reader Service Card

Is Space an Important Factor?

Then Use This Distinguished Line of Close-Coupled Pumps



AURORA PUMP

21 LOUCKS STREET

Circle No. 81 on Reader Service Card FEBRUARY, 1955 . COMMERCIAL REFRIGERATION squirrel cage blower and 1-piece condenser fan blade. Deluxe model features push button controls, winter warmer and thermostat control as standard equipment. Units can be mounted flush with the window or "all in" the room.

Circle No. 171 on Reader Service Card

Redwood Cooling Towers

Product: "Thermal" atmospheric cooling tower series.

Manufacturer: Thermal Agency, Houston, Tex.

Features: Ratings of towers



in the series are from 3 to 50 tons. Constructed of dry, clear or select heart redwood. Basin floors shipped pre-assembled with all holes precision drilled. No drilling or nailing required on the job. Furnished complete with plated hardware, suction connection and screen, drain hole with plug, bronze float valve assembly, and galvanized steel spray headers. Copper or plastic headers are available at extra cost. Also featured are "Aspir-Jet" Tenite Butyrate spray nozzles which give water break-up at low pressures, and which aspirate air with mist

Circle No. 172 on Reader Service Card

Room Cooler Line

Product: 1955 line of room coolers, consisting of 4 models in

Manufacturer: Frigidaire Div., General Motors Corp., Dayton, Ohio.



Features: Super series models (illustrated) available in 1/3 and 1/2-hp capacities for installation in either casement or double-hung windows. Deluxe series includes 34 and 1-hp models featuring 2

separate cooling systems. On moderately warm days only one system is needed and on really hot days, both combine to relieve high temperature and humidity conditions. Deluxe twin-powered units measure 26" wide by about 14" high. Air distribution is controlled by adjustable grilles at the front. Simple controls concealed behind flip-open panel below the air delivery grille. All units can be installed flush with drapery or in a variable balanced position. Circle No. 173 on Reader Service Card

READY FOR THE TEST?

You're ready for any test if you have these Marsh "Serviceman" instruments. They all share in those commendable Marsh family traits precision, ruggedness, honest quality, remarkable value, Notice the new models and the new "Serviceman" Timer! Remember:

Your jobber stocks them

TESTING THERMOMETER





DELUXE 3-SCALE





TIMER

Useful new arrival in "Serviceman" family shows total running time and total elapsed time of refrigerating unit

on 24-hour dial. Easier to use and read than expensive recorder; costs far less. Two models cover all condi-



Sales affiliate of Jas. P. Marsh Corporation Dept. P. Skokie, III.



TESTING GAUGE SET



testing gauges in handsome polished brass cases with beveled glass crystals. Rings readily unscrewed for quick access to recalibrator. Note retard scale on compound gauge for close reading in important testing



4-SCALE TESTING GAUGE

hree extra colordifferentiated scales in this accurate testing gauge show temperature corresponding to pressure for sulphur dioxide, methyl chloride and Freon Ranges for all



POCKET THERMOMETER

Highly accurate; easy to read; equipped with swivel to hang in refrigerator or clip in your pocket.



Circle No. 83 on Reader Service Card

Double-Duty Thermostats

Product: Thermostats which automatically select either heating or cooling.

Manufacturer: Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Features: One model designed for southern areas, provides complete shut-off of the system. Another model permits shut-off of only cooling system. Slide action



switches mounted on thermostat face control fan and shut-off. Bi-metal sensing elements are featured for both heating and cooling control. Individual levers permit adjusting heating and cooling control points separately. Also, automatic night-time setback of heating system is possible with addition of timer and transformer. Various models available either with or without pressure controls. Thermostats measure 234 x 5 x 174."

Circle No. 174 on Reader Service Card

Two Cooler Lines

Product: "Year-Round" and "De Luxe" lines of room air conditioners,

Manufacturer: Amana Refrigeration, Inc., Amana, Iowa.

Features: Flush mounting is one of 23 possible installation positions available with the two lines for either casement or double-hung windows. All models equipped with thermostats, and are constructed according to new electrical codes. Year-round models in 1/2, 3/4, 1 and 11/2-hp sizes have condensers enlarged up to 33% and evaporators increased in size up to 50%. Any one of six different combinations of cooling. heating, dehumidification and ventilation can be chosen by adjusting single glider control located in the unit's front. De Luxe units, available in same hp sizes, also have enlarged evaporators and condensers. Metal case and internal parts are acoustically insulated. All models fit openings larger than 25" wide and 15" high; include a standard installation kit for double-hung windows from 26 to 48" wide. Special kits for casement window installations are available. Circle No. 175 on Reader Service Card

Mechanical Air Filters

Product: Series of three basic, permanent, cleanable filters.

Manufacturer: Trion, Inc., McKees Rocks, Pa.

Features: Panel impingement filter consisting of specially formed galvanized screen filtering media arranged in closely spaced rows of double air scoops is available in single panel or multiple banks. Self-washer type has an automatic washing attachment for banks of panel impingement filters which thoroughly cleans filters of col-



lected dirt. Traveling curtain type has a motor-driven assembly which rotates filter panels through an oil bath for constant cleaning of filtering media.

Circle No. 176 on Reader Service Card

Room Cooler Line

Product: 1955 line of room air conditioners.

Manufacturer: General Electric Co., Major Appliance Div., Louisville, Ky.

Features: Flush mounting, optional heating and greater cooling at lower operating cost are features of the line. Included in the line are ½, ¾ and 1-hp units which incorporate three rotator air directors located behind the grille which adjust independently at a slight touch. Rubber and spring mountings and use of noise

absorbent plastic help produce almost noiseless operation. Permanent filter can easily be removed and cleaned with water. Resistance heating element turns on automatically when outside air drops below 40 F, giving supplemental heating on days beyond the operating efficiency level of the reverse-cycle operation.

Circle No. 177 on Reader Service Card

Zip-On Duct Cover

Product: "Protektinsul" prefabricated, specially compounded polyvinyl chloride duct covering finish.

Manufacturer: Miracle Adhesives Corp., New York, N. Y. Features: Furnished to exact



size, cover simply zips on and locks in place. Requires no cutting, fitting, or sewing on the job. As a finish over duct insulation, Protektinsul meets all requirements of good outside finish. Both indoors and out, covering provides an airtight, watertight, vapor-tight finish and is available in several colors. No painting, finishing or further maintenance is required.

Circle No. 178 on Reader Service Card

Automobile Cooler

Product: Thermostatically controlled automobile air conditioner.

Manufacturer: Forston Co., Houston, Tex.

Features: Equipped with a Tecumseh compressor, unit has a 3-speed fan control and fingertip controls. Magnetic clutch in connection with the thermostat controls operating time of compressor. Eliminates compressor operation during winter months.

DIRECT MAIL . . .

Continued from page 36

higher, even in the first month. Direct mail has varied results.

Sometimes a firm can lay claim to immediate sales, and sometimes it takes weeks to tally any results. And Kold Draft isn't any different than the next dealer; their results are just the same in relation to the number of replies.

The company is pleased with this method of promotion, however, because through this daily use of direct mail it is getting leads from places it wouldn't have sold to otherwise. Kold Draft has several salesmen out calling on the trade, and they cover the territory pretty thoroughly, but each day the direct mail strikes some target that a salesman hasn't hit recently, or has never been able to contact.

HOW TO MAKE MONEY . . .

Continued from page 43

son or his salesman can show to prospects from the northern Ohio or southern Michigan area.

"If a man is now running a general type store and keeps ice cream, and has a soft drink counter, you can show him he can make more money by making his own ice cream for less cost by using one of these machines," Sprott points out. "But you can't really convince him until you show him some one who already has done just that. Sure, we have balance sheets and records from both small and large operations, but prospects still like to get the story direct from some user."

In selling the profit story, Johnson salesmen make it clear that merchandising is not the only thing to consider. A customer doesn't select equipment that is suitable to his particular merchandising operation, he can't make money. Most of the Toledo dairies, for instance, only deliver mix about three days a week, so Johnson Refrigeration points out that if an operator wants to be sure to have mix on hand, he should buy a dairy milk cooler which will enable him to keep a quantity of mix on hand.

A great deal depends on the dealer, and how good a location he has, but if he doesn't have adequate facilities then he won't be able to take care of his trade. And that is what Johnson salesmen want to be sure of.

One other thing that Johnson insists upon is that when a salesman has sold a customer he goes back some weeks or months later to see how the customer is operating and if the salesman can make suggestions on how the operation can be improved to improve the user's

profit picture. Sometimes, for instance, an operator will not be making enough ice cream to handle his trade. Johnson then checks his location to see whether or not buying another machine would be beneficial. If so, he tries his best

NEW BUSH CONTROLLER

Bush Mfg. Co. has announced the appointment of Lee P. Smith as controller.

for any air direction

Benney AC4 COILS

with Universal Suction Connections

Standard, 4-row, AC4 Cail for air condition ing of stores, homes, and offices . . . wherever built-up systems are used with or without duct distribution. Available in 5 capacities in 11 popular sizes with F-12, F-22 refrigerants.

Tenney AC4, standard 4-row air conditioning coils are the perfect, standardized line of direct-expansion coils. Construction includes 5/8" O. D. copper tub-

ing; Facetized Fins for greater heat transfer; heavygauge steel top, bottom, and end plates (aluminum on request); all copper suction headers; high-temperature, hard solder tube joints; and inert atmosphere inside tubes for clean, scale-free refrigerant passes.

These Tenney AC4 Coils can be sold and installed with complete confidence for any air direction, through universal suction connections. Like all Tenney products they're backed by sound engineering and quality workmanship that guarantees easy installation and customer satisfaction. Ask for Bulletin 103-54.

			APP	LICAT	HOIT	DATA				
Medel	Num nel Tens	Distributor Connection	Syction Connection	Finned Lpth.	Finnad High	BIAMBRESIONS			Face Area	Bazania
No.						A		C	Sq. ft.	Clex.
ACA-ZA	2	N-00.	14"00	29"	2%"	3%"	19."	2"	1,51	750
AC4-28	2	8.00	14"00	20"	11%	16"	11/6"	11/4"	1.36	750
			Complete	range	of mo	dels an	d sizes			
ACATHE	7%	14.00	16 00.	16	22%	4%	5	135	5.63	1000
ACA-IDA	10	1%" O.D.	2% 0.0.	58"	18%	46	75.	16"	7.56	3750
AC4-108	10	19"00.	14, 00	48"	22%	4%	4.	1%	7.50	3710



Engineers and Manufacturers of Refrigeration and Environmental Equipment Circle No. 84 on Reader Service Card





The Serviceman's **Best Friend Used Across America**

Excellent for Painting or Touching Un Air Conditioning Equip. Fin Pipes
Duct Werk
Connectory
Cabine x
Piping and Cocks
And 101 other use

For better work and profit! No mixing, no clean-up, no compressor or hose needed. Just shake the can and paint. All cans furnished with guaranteed non-clagging spray valve. Complete your jobs the modern way. Ask your jobber for Sprayon today!

Attention Representatives! Some select terri-tories still open, Write for money making de-tails today!

CHAMPION BRONZE POWDER & PAINT CO., Inc.

C2101-21 N. Elston Ave., Chicago 14, III.



Circle No. 85 on Reader Service Card

USEFUL **BULLETINS • BOOKLETS • CATALOGS** HO. C. Salar N. P. P. B. B. B. B. B.

A NEW 12-PAGE CATALOG just issued by the McIntire Co. gives latest information, part numbers, capacities and dimensions of the enlarged line of DFN driers, filters, strainers, charging lines, water bubblers, water glass fillers, water regulating valves, vibration absorbers, and hose for pull-out compartments. Included are new drier designs, additional filter sizes and selection chart for driers up to 100 ton capacity.

Circle No. 101 on Reader Service Card

SMALL TONNAGE CONDENSERS, both shell and tube and shell and coil types, 3 to 150-ton heat exchangers and liquid receivers, and range of Hi-Peak water coolers are the subject of a new 4-page catalog (No. 300) now available from Acme Industries. Data for selecting the proper units are given plus descriptions of major construction features. Selection of Hi-Peak storage-type water coolers is simplified by water-range and performance curves for intermittent and continuous operation.

Circle No. 102 on Reader Service Card

VALVES AND FITTINGS manufactured by York Corp. are described in a folder recently made available by the company. The folder points up performance features, and emphasizes that the company produces a complete range of valves and fittings over 6000 different types and sizes from 1/4" to 14".

Circle No. 103 on Reader Service Card

COMPLETE 1955 CATLOG listing its extensive line of allcopper driers, strainers, oil separators, capillary tubes and various other refrigeration parts is now available from Wabash Corp. The catalog has been completely revamped with many new items such as refillable driers, solder connection strainers, etc. added to previously listed products. Specifications, parts numbers and all essential data are covered in the catalog.

Circle No. 104 on Reader Service Card

PACKAGED LIQUID CHILLERS is the subject of a new bulletin offered by Worthington Corp. The line described in the bulletin ranges from 71/2 to 150 hp in a variety of models and combinations. Pictorially and graphically illustrated, the new bulletin gives specifications, dimensions and applications of various size units. Designated as Bulletin C-1100-B52.

Circle No. 105 on Reader Service Card

NEW FOUR-COLOR SPECIFICATIONS sheets on its Model 3506 MB 6-foot dairy case and Models 3606MB-SF and 3606MB-GF 6-foot cases for frozen foods and ice cream are available from Sherer-Gillett Co. All models are of the open type for self-selection by customers. Both cases have a big refrigerated display well plus two non-refrigerated display areas.

Circle No. 106 on Reader Service Card

A HOW TO DO IT folder on welding, brazing, soldering and cutting steel with alloys and fluxes especially developed to minimize job costs is available from All-State Welding Alloys Co... Inc. Folder is pocket size, but contains operator instructions on all 14 of All-State's alloys and fluxes for application to various kinds of steel by torch and arc.

Circle No. 107 on Reader Service Card

(Turn to page 112 for more Useful Literature)

Only "Kelvinator Cold" gives you ALL 3





interesting facts

... about a new series of Goulds Multi-Purpose Centrifugal Pumps

Newest in a line of heavy-duty centrifugal pumps reputed for their dependable, trouble-free operation, the Goulds Fig. 3189 Series offers you:

Versatility

You can use the Fig. 3189 single-stage, open impeller pumps for general water service, irrigation, circulation, slurries, transfer, factory wastes and for air conditioning. You can choose just the right pump for your need from 10 sizes with capacities ranging up to 1080 gallons per minute, with heads up to 180 feet at 1750 RPM.

Economy

The Fig. 3189 Series is made in the Goulds tradition—they're built to work hard and to last long. Their design accommodates wide interchangeability of parts, greatly reducing parts inventory requirements where many pumps are used.

Low Operating Cost

Modern hydraulic design provides high operating efficiency with relatively low power consumption. Impellers are statically and hydraulically balanced for smooth operation.

Operating Convenience

You can adapt the Fig. 3189 pump to various piping arrangements by swiveling the discharge nozzle to any one of three positions.

Maintenance Convenience

Wide openings in the support head give ready access to gland and stuffing box. Bearing housing is completely sealed to exclude moisture and dirt. You can safely use the unit outdoors without fear of dirt harming the bearings and you can hose it down without fear of water damage.

For specifications, performance curves and other interesting design details that contribute to long, economical service, send for illustrated Bulletin 720.4.



ATLANTA • BOSTON • CHICAGO • HOUSTON • NEW YORK PHILADELPHIA • PITTSBURGH • TULSA

Circle No. 88 on Reader Service Card

USEFUL LITERATURE . . .

Continued from page 110

OPENING HERMETIC COMPRESSORS is said to be made easier by a new semi-automatic machine described in literature available from Frankell Mfg. Co. The machine, it is said, can open any shape compressor (including avail) regardless of the location of the weld. Exchange stators and compressor discharge plates for hermetic units are described elsewhere.

Circle No. 108 on Reader Service Card

PUSH-BACK GLASS FILLERS of improved design are the subject of a catalog insert being distributed by Cornelius Co. A variety of styles are illustrated and described. Features are detailed and diagrammed.

Circle No. 109 on Reader Service Card

MORE EFFICIENT SOLDERING method is claimed for the plier-type resistance soldering set being promoted in a bulletin available from Ideal Industries, Inc. Applications of "Thermo-Grip" unit for maintenance work in refrigeration, heating, and plumbing fields are pointed up.

Circle No. 110 on Reader Service Card

MOTION CONTROL through the use of instrument and machinery mounts, bearings, and bushings is the subject of Catalog No. 70 issued by Industrial Products Div., General Tire & Rubber Co. Complete specifications data is provided.

Circle No. 111 on Reader Service Card

(See page 100 for Air Conditioning Literature)

This Beautiful New Pinnacle DELICATESSEN DISPLAY CASE offers all the features that make your sale easier!



• Easy (fingertip) stiding

Top and dock shalves adjustable.
Full view of all meats, dairy products, etc.

• Three popular sizes — 6 ft., 8 ft. and 10 ft.

Quality construction
throughout.
 Economical.
trouble-free
tarvies

Exterior and interior of heavy gauge steel, finished in gleaming white life-time porcalain. Entire cabinet covered with water-proof liner between steel shell and cabinet. Cast brass, chrome plated hardware. Display glass—triple glazed Thermopane. Insulation—3½" fibre-glass. Fluorescent

light in display compartment. Automatic light in storage compartment. All wiring U.L. approved. Drip pans—stainless sheel. Slatted wood floor racks. Colls heavy duty finned type. (Plotters and scale stand at slight extra cost).

A few Pinnacle Territory Franchises are still available. Wire or write today for full information and illustrated lifectural.



EXPORT DEPT.—39 Broadway, New York

Circle No. 94 on Reader Service Card
FEBRUARY, 1955 • COMMERCIAL REFRIGERATION



The all new Crystal Tips B-200 ice maker's 2-in-1 feature puts it "ahead of its time" and the field. See it and you'll agree that it makes all other ice makers obsolete,

The Crystal Tips 2-in-1 feature provides both cubed and chipped size ice without grids or extra crushing mechanisms. One B-200 gives you two ice makers for the price of one. No need for accessories that add to your cost.

In 24 hours the B-200 produces over 3,700 large, individually frozen, uniformly sized, easy handling circular pieces of ice. The bin stores a full day's production.

Installation is simple, needs only $\frac{1}{4}$ " supply, nominal drain, and 115 volt current. It is a good money maker for any dealer.

IT IS A REAL MONEY MAKER!

Every quantity user of ice is a prospect for this versatile 2-in-1 unit. The prospect's own figures on present costs of ice show him how the Crystal Tips or Chips Ice Maker pays for itself. Literature and mailing pieces supplementing the national advertising are available for your direct mail use. Write for further information.

AMERICAN AUTOMATIC ICE MACHINE CO.

1798 Fourth Street N.W.

Faribault, Minn.

A Subsidiary of McQuay, Inc., Manufacturers of Heat Transfer Equipment Since 1923



For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your request will be forwarded directly to the companies concerned.

(For Air Conditioning Products turn to page 102)

Retarder-Salad Refrigerator

Product: Model RDA-40-S Sta-Kold dough retarder-salad refrigerator.

Manufacturer: Victory Metal Mfg. Co., Plymouth Meeting, Pa.

Features: Unit has exclusive interchangeable interiors that are



adjustable on 1" centers to take any combination of pan slides, stationary or pull-out meat rails, stationary or pull-out shelves and refrigerated drawers. Interior accessories changeable in minutes, no special tools needed. All-metal construction. Sanitary wipe-out bottom. Capacity 40 cu. ft. Tray capacity equipped with 53 sets of slides. Adjustable on 1" increments. Front, stainless steel; top, sides, back of corrosion resistant aluminum. 1/3 hp scaled unit. 501/4" wide, 331/2" deep, 723/4" high. Available as pass-through

Circle No. 141 on Reader Service Card

Automatic Ice Cuber

Product: Scotsman Super Cuber Model SC-200.

Manufacturer: American Gas Machine Co., Albert Lea, Minn.

Features: Available with either air or water cooling, unit will produce up to 3,500 or 225 lbs. of ice per day. Waist high stainless steel



storage compartment holds 150 lbs. of ice cubes and heavy insulation prevents melting or sticking. Unit has 1/2 hermetically sealed condensing unit, requires only 14" water and 3/8" drain connection. Measures 42" long, 24" wide, 39" high. Five-year warranty on sealed condensing unit.

Circle No. 142 on Reader Service Card

Flexible Connectors

Product: Standardized line of easy-to-install flexible connectors.

Manufacturer: American Brass Co., American Metal Hose



Branch, Waterbury, Conn.

Features: New product, "Flexpipe", consists of seamless flexible phosphor bronze tubing with brass NPT male fittings attached to each end. Wire braid covering adds strength. Can be used to dampen vibration: take care of expansion and contraction in risers and supply lines; to connect outlets which do not line up; and to compensate for other piping "travel". Easy to install in cramped spaces.

Circle No. 143 on Reader Service Card

Milk Dispenser

Product: New revised Model M-1 milk dispenser.

Manufacturer: Sunroc Refrigeration Co., Glen Riddle, Pa.

Features: Single-hand, easylift bar to facilitate comfortable



and fast operation. This device makes possible for operator to use only one hand to hold paper cup or glass and dispense milk simultaneously. Slight wrist pressure against bar operates dispensing mechanism. Shut-off jaws eliminate after-drip, does away with need for container to catch drippings. All milk, including that in dispensing tube, kept at 50 F or lower; single-service dispensing tubes are of pre-determined length; easy to disassemble dispensing mechanism without tools: rounded interior cabinet corners; moisture proof refrigeration breaker strips. Units recently approved for use in New York state.

Circle No. 144 on Reader Service Card

Addressing System

Product: New addressing machine and system.

Manufacturer: Master Addresser Co., Minneapolis.

Features: Typed master slips, reinforced by holder cards, feed



The

SPORLAN

G VALVE
WITH SELECTIVE CHARGES

C CHARGE

for Suction Temperatures above Zero

Z CHARGE

for Suction Temperatures below Zero

X CHARGE

for Extremely Low Temperatures

• • • and the reasons for Sporlan's great reliability are two-fold.

There has been just one Sporlan

design, never changed, but con-

stantly improved by 21 years of engineering know-how!

And Sporlan has always offered Selective Charges which keep on proving, year after year, that no one charge can properly operate a valve on all applications.

No wonder Service Engineers vote Sporlan's G Valve the number one Thermostatic Expansion Valve for commercial refrigeration!

You, too, can rely on Sporlan's Planned Peak Performance G Valves with Selective Charges. Order them from your wholesaler today, and be sure to ask him for a new Sporlan Catalog, showing the proper Solenoid Valves and Catch-Alls to go with them.

Remember . . . Buy Sporlan Right-Down-The-Line and get Peak Performance throughout! SPORLAN lalve (6.

7525 SUSSEY AVENUE

ST. LOUIS 17, MO.

EXPORT DEPARTMENT

89 BROAD STREET

NEW YORK 4, NEW YORK

through addressing machine automatically for fast mechanical addressing. Addresses can be read before printing. To prepare plate it is only necessary to type name and address once on paper slip which has chemical transfer process on back. Can make as many as 50 prints before replacing with new plate. Address cards stack in 3 x 5" card trays, and can be tabbed, etc. for reference and use. Holder card has about same record-keeping area as 5 x 7" card. Circle No. 145 on Reader Service Card

Back-Bar Equipment

Product: New line of back-bar equipment.

Manufacturer: Star Metal Mfg. Co., Philadelphia.

Features: Complete line encompasses 713 models and variations. New line is called "Add-a-Star" equipment, being made so that every unit lines up with the others and can be used interchangeably in back-bar assembly. Line includes a wide selection of cold salad units, sandwich units, buffet

units and waitress stations, refrigerated bases, updraft and downdraft equipment stands, hot food tables, and miscellaneous stands

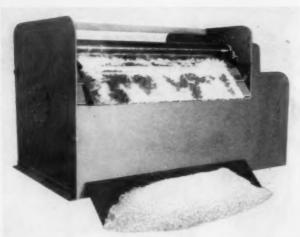


and enclosures. Self contained sandwich unit (illustrated) has roomy refrigerated base cooled by sealed condensing unit, ready to plug in and operate. 3" sealed insulation; 3, 4, 5 foot models available.

Circle No. 146 on Reader Service Card

KNOWLES ICE MAKER

Sizes From ½ Ton to 10 Tons Daily Capacity



The Cost Of Ice Is The Cost Of Water And Power

These machines are solid drum, direct expansion type and are made to operate on ammonia or Freon-12 as desired. The ice comes from the machine at low temperature with no entrained water and can be handled on any conventional conveyor system. The machines are exceptionally sturdy in construction, long lived, and are simple to operate. There is no deterioration of the ice making surface as the impact bar does not touch the drum but removes the ice by impact. No sharpening of the impact bar is necessary.

These machines consistently exceed their minimum and often exceed their maximum rated capacities.

Additional plant space will be free for other operations, because a Knowles Ice Maker requires very little floor area, and storage may be reduced to your exact requirements. The inconvenience of delayed delivery schedules, large purchases to insure a supply of ice, and other interruptions of routine work are eliminated.

DESIRABLE TERRITORIES OPEN FOR DEALERS, INQUIRY SOLICITED.



Circle No. 91 on Reader Service Card

Soft-Seat Solenoid

Product: New solenoid valve using spring-loaded synthetic valve and introducing other new features.

Manufacturer: Minneapolis-



Honeywell Regulator Co., Minneapolis.

Features: "Soft-seat" valve, made of Buna N rubber, should need never be replaced, company says. Available models in 34", 1½" standard and large, and 38" sizes are designated VA835 (low voltage), 1" low- and line-voltage models designated VA84-VA44. Other improvements include increased capacities, replaceable coils and use of a conical spring-loaded

plunger which presses valve disc snugly against seat. "Rotatable" head makes installation easier; only cover nut need be loosened. Doughnut type coil easily replaced in event of burnout.

Circle No. 147 on Reader Service Card

Stainless Reach-In Line

Product: Completely new line of reach-ins in stainless steel.

Manufacturer: Tyler Refrigeration Corp., Niles, Mich.

Features: New line ranges in capacities from 18 to 79 cu. ft.,



designed for heavy food requirements of restaurants, hotels, tavern, bakeries, drug stores, food stores, etc. Welded-steel construction, minimum of 3" insulation. Heavy-duty coils used for fast bottled beverage cooling. Tripleglazed glass doors, wide variety of door arrangements, including 1, 2 or 3 doors, sliding or open-out types, make line more widely usable. Chrome hardware, rustless tracks or sliding doors. Stainless steel exteriors, aluminum interiors. Six models in general stainless steel line, including remote and self-contained types. Also special dough retarder and florist display

Circle No. 148 on Reader Service Card

Pipe and Tube Benders

Product: Hydraulic bending tool for pipe and tubing.

Manufacturer: Tal-Bender, Inc., Milwaukee.

Get Your

DURO-CHROME

Pocket Catalog

REFRIGERATION SOCKET SETS

With chrome alloy steel sockers in all the slace and shapes required for retrigoration work. Hexagon for hex auts and bolts, square for valve stems and set screws; special oval or proeg sackets for packing gland muts.

Features: Same bender used for pipe and tubing. "One-Shot" pipe benders are equipped withnewly developed frame which enables user to bend pipe, rigid conduit, thinwall conduit, hard and soft copper aluminum and steel and any other tubing in 90° and 180°. Of special advantage when | y.1448



used on the job, eliminates need of having several types of benders on hand.

Circle No. 149 on Reader Service Card

New D-C Motor Line

Product: New "Super T" line of D-C motors.

Manufacturer: Reliance Electric & Engineering Co., Cleveland.

Features: New motors are described as producing fastest and most accurate response ever offered in a standard design motor, and are reported to be twice as effective in many applications as any other motor now produced. "Dynamic Response" of motors is described as new fundamental feature that has been built into Super



ASK YOUR DURO JOBBER—for a free capy of the Pocket-Size Duro-Chrame Tool Catalog; or sand 10c in coin, with coupon below, to Duro Metal Products Co.

MY NAME ADDRESS

City

SEND THIS COUPON FOR YOUR PERSONAL COPY

Also Makers of Nationally Advertised DURO Power Tools

DURO METAL PRODUCTS COMPANY
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Please sond my capy of the DURO-CHROME Packet-Size Catalog for which I enclose 10c in coin the cover costs of postage and handling.

T line. Ruggedness, ability to take full loads and overloads, to change speed rapidly, to maintain torque and tension and reverse and stop



quickly are other features claimed. Acceleration to full speed with new motor is only half the time formerly required, company says. Super T line motors being produced in sizes from 20 to 100 hp. Higher and lower horsepower models will be added. Full range of mechanical enclosures available.

Circle No. 150 on Reader Service Card

Pressure Regulating Valves

Product: New Model 237 crank case pressure regulating valve.

Manufacturer: A-P Controls Corp., Milwaukee, Wis.

Features: Available in 1½ and 3 ton sizes, Freon-12. Valve



protects compressor motor against overload and possible burnout caused by high torque loads due to excessive suction pressure. At high suction pressure load valve will protect motor by pressure regulation of refrigerant gas to compressor inlet. Only a safe back pressure is allowed to develop and by modulating action the valve will vary flow to maintain pressure limit setting. Pressure range is adjustable and can be fixed between 0 to 40 lbs. gauge. Standard

connection sizes in $1\frac{1}{2}$ ton valve are $\frac{5}{8}$ ", SAE male flare, $\frac{5}{8}$ ", $\frac{7}{8}$ " and $\frac{1}{8}$ " O.D. solder. 3-ton valve connection eyes are $\frac{1}{8}$ " and $\frac{13}{8}$ " O.D. solder.

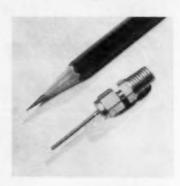
Circle No. 151 on Reader Service Card

Capillary Tube Fitting

Product: Capillary Swagelok tube fitting.

Manufacturer: Crawford Fitting Co., Cleveland.

Features: New tubing is said to eliminate earlier problems of 1/16" capillary tubes because of difficulty in flaring small size tub-



ing and getting satisfactory seal. This fitting works on same principle as other Swagelok fittings, requires no flaring whatever, no special tools for installation and no preparation work on tube itself. To install, slip capillary tubing into fitting, turn nut until a tight seal is secured, and installation is ready for operation. Available in brass, aluminum, steel, stainless steel and Monel.

Circle No. 152 on Reader Service Card

Walk-In Cooler

Product: All-metal sectional walk-in cooler.

Manufacturer: Nor-Lake, Inc., Hudson, Wis.

Features: Construction designed to give complete protection against vapor condensation. Semirigid 3½" Fiberglas insulation combines with metal exterior and interior panels to form effective seal against heat infiltration. Cellular rubber expansion joints for good fit at all times. Exterior panels of baked enamel finish. Units shipped knocked down for quick



assembly. Switch assembly with pilot light, junction boxes, etc. to meet all lighting requirements. Units available in 1-ft. variations from 6' x 6' x 7'6" to 12' x 12' x 7'6"; larger sizes on quotation, with or without plug-in panel package refrigeration system.

Circle No. 153 on Reader Service Card

Solenoid Valve

Product: Addition to line of Atkomatic solenoid valves.

Manufacturer: Atkomatic Valve Co., Indianapolis, Ind.

Features: General purpose industrial type unit is suitable for use with air, gas, Freon, methyl



chloride, water, oil, low pressure steam or other media not harmful to bronze or 316 or 416 stainless steel. Sizes to fit ½", ¾" and 1" pipe sizes; 150 psi pressure down to 0 psi pressure; temperature to 250 F. Parabolic shaped disc screw to prevent water hammer effect and to assure minimum drop in pressure through valve. Low current consumption. Instantaneous action if required. Piston ring used to assure "stick-free" operation. Glass

wound, silicon impregnated coil for operation above 212 F. Circle No. 154 on Reader Service Card

Pressure Relief Valve

Product: Model 750 ASME rated pressure relief valve.

Manufacturer: Bell & Gossett Co., Morton Grove, Ill.

Features: The new valve has a relieving capacity of 750,000 BTU/hr. It employs a new type



of silicon disc seat. Tests have proven this material to be impervious to excessive temperatures and but a very small pressure differential is required to close the valve after the pressure is relieved. The possibility of steam flash is thus eliminated.

Circle No. 155 on Reader Service Card

Large Ice Makers

Product: Two large capacity ice making machines.



Manufacturer: Carrier Corp., Syracuse, N. Y.

Features: Units have capacities of 1,000 and 2,000 lbs. per

day. Also planned soon is chip-ice machine with 500 lb. capacity. These join existing units which have 200 and 450 lbs, capacity to complete line. New units known as Flakemaster and Chipmaster, and are designed to meet such large capacity requirements as markets, hospitals, hotels, etc. Flakemaster is available with standard storage bins of 500 lbs. capacity and either one or two access doors. Chipmaster uses bin of 250 lbs. capacity. Flake-ice units freeze thin film of ice on inside of stationary cyl-

inder, and rake-like cutter inside drum scrapes off ice flakes. In combination cuber and crusher, cubes fall into one side of divided bin, crushed ice into other side. Circle No. 156 on Reader Service Card

CARBONIC NAMES O'BRIEN

Carbonic Dispenser, Inc. of Canfield, Ohio has announced the addition of a new distributor in the New York area, the S. J. O'Brien Sales Corp.



COOL SUPPLIES FOR THE NAVY



HERE'S ENOUGH COOLING to take 18,000,000 pounds of groceries on a round-the-world cruise. The 10 able-bodied 75 horsepower reciprocating refrigerating machines shown here will be billeted aboard the USS Rigel. They're the refrigerating machines to be used on one of the world's two largest reefer vessels, gathered in Carrier Corp.'s plant just before shipment to Ingalls Shipbuilding Corp., Pascagoule, Miss., where they will be installed. A similar group will be dispatched for installation aboard the USS Vega, sister ship to the Rigel. The combined capacity of 54 refrigerated compartments in each reefer is 425,000 cu.ft. More than six miles of cooling coils will be installed in each ship, and piping connecting each of the 12-cylinder refrigerating machines located throughout the vessel for serving individual spaces will exceed two miles.

TRANTER MFG. NAMES 2 NEW DIRECTORS

Two new members were elected to the board of directors of Tranter Mfg. Inc., at the company's annual stockholder meeting. They are John Seaman of the Lansing law firm of MacLean & Seaman, and Robert E. Jaqua, executive vice president of The Jaqua Co., Grand Rapids advertising agency.

TEACHING THE PUBLIC ABOUT AIR CONDITIONING



HOW AIR CONDITIONING WORKS is one of the displays featured in the observerparticipant educational exhibit opened by Worthington recently in New York City. The exhibit illustrates basic operating principles of machinery related to business, industrial, community and home life. Visitors can operate the displays themselves to gain a better understanding of them and their use.

SEES \$14 BILLION FUTURE FOR HOME CONDITIONING

The opening up in 1955 of what could become a \$14 billion market for air conditioning existing homes previously considered too difficult or expensive to air condition was forecast by president Cloud Wampler of Carrier Corp. at a meeting in New York City at which the company's 1955 line was previewed.

In a review of the outlook for the air conditioning industry, Wampler announced that Carrier had developed equipment not much larger than a room air conditioner, and using no water, designed to serve the 22 million homes now using hot water or steam, floor furnaces or space heaters. He also:

Predicted that total industry volume in 1955 would hit 21/4 bil-

Said residential sales would hit a new high of \$160 million this year.

Estimated the potential of all types of home air conditioning at about \$28 billion.

Said remodeling and rehabilitation would hit new highs, with air conditioning featured. Wampler said that the existing home, rather than the new one, is fast becoming the major part of the residential market. He estimated 6½ million homes with forced warm air heat as an \$8 billion market; and 7 million homes with gravity heat as a \$6 billion potential.

It is now possible, due to Carrier research, to estimate within a few dollars and before installation how much the average seasonal cost will be for central cooling in any section of the country, Wampler said.

Operating cost can be obtained from simple tables as soon as average cooling capacity requirements for the home have been determined, he said. Estimate of cooling cost is based on a cooling degree day concept thoroughly researched in actual tests in houses all over the country.

NEW SALES AGREEMENT

Wolverine Tube has appointed A. B. Murray Co. of Elizabeth, N. J., as sales agent for condenser and heat exchanger tubes.

SOLD ON PACKAGES ...

Continued from page 94

as great as that of space for the central station equipment itself. The telephone company didn't have a room large enough to house this much equipment. Thus, several package units fit into space here and there much more readily.

One important consideration in using package units is the hook-up for the water saving equipment. Stevens uses a continuous pump with both the electrical and water supply inter-connected instead of hooked up separately.

"It is cheaper to run the motor continuously," Stevens points out. "If you had it cycled for every 15 minutes, it would take more power to run the motor than if it ran for three hours. There is also less wear and tear on the motor this way. Actually, a continuous pump is better, I think, because there is always one air conditioner running, anyway. It is better for the water to be circulated through the condensation."

er coil to give a scouring action and eliminate lime and other foreign matter in the condensing coil."

In the beginning it was mentioned that Stevens had two installations to illustrate the advantages of the package cooler. A second and more recent example of his installation practices is shown by a medical building that has just been built. This building was both designed and built with package units in mind. Stevens is using 8" ducts instead of the usual 12 to 14" ducts. From the basement floor to the roof of the building it is only 21' 4", and that includes two 9 ft. rooms. This means that there is just 3' for the joists and flooring. On this installation, before Stevens got the bid, a central station was considered, but the bids showed it would cost \$16,000 more than Stevens' bid of \$23,000 for the cooling and heating installation.

In summing up, Stevens lists these advantages for using package units over central station cooling equipment in both new and existing buildings: (1) Economy of installation, both in initial cost and operating expense.

(2) Versatility of the unit as far as location is concerned. For example, a restaurant in town had a 5-hp unit on the side of the dining area, but business boomed, so they had to move the unit out of the dining area so they could have more tables. It was relocated in the basement.

(3) Zone control of temperature. In the medical clinic they had to have more air conditioning on the south side of the building where they got more sun and radiation from the sidewalk. The cooling problem on the other side wasn't great, and only the units covering the south side of the building had to be operating a great deal of the time.

(4) Lower maintenance cost. The package units are both easier to take out when moving or to pull out for repairs. Since another unit in the room can operate while one is being fixed, there also isn't the pressure to get it back in operation. Parts, as a rule, are a little easier to get, too.

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- Sweat or flange-type connections.
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"iValiente!" cried the Spanish admiral

He cheered as his launch fished this man and seven more waterlogged American sailors out of Santiago Harbor, Cuba, on the morning of June 4, 1893. This was straining Spanish chivalry to the break-



ing point, for Richmond Hobson (right) and his little suicide crew had spent the previous night taking a ship into the harbor entrance under a hail of cannonade and deliberately sinking her

to bottle up the Spanish fleet.

Hobson, who planned and supervised every detail of the operation, from placing the scuttling charges to dropping anchor under fire, was actually an engineer, not a line officer.

In Santiago Harbor, he led his first and only action against the enemy. But his cool-headed daring made him as much a hero of the day as Admiral Dewey. And proved again that America's most valuable product is Americans.

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